

Brick, Fireclay

153768

MATERIAL SAFETY DATA SHEET**J.H. FRANCE REFRACTORIES CO.**

SNOW SHOE, PA 16874

TELEPHONE 814-387-6811

Date Prepared:

Nov. 19, 1985

Date Revised:

CERRO COPPER PRODUCTS COMP.

MSDS NUMBER - CCPC-00-0010

APPROVALS:

ENVIRONMENTAL: (PRIOR)

SAFETY: (PRIOR)

PURCHASING: (PRIOR)

General Classification of Product:

BRICK, FIRECLAY

Trade Name/Synonym of Product:

FR SEMILITE	MEDAL P4
LEHIGH B	ROCKSPAR 105
✓FRANCE NON SPALL	SL-13
FR	COLUMN 7, 8, 9
FNS	FR 20, IFB
ROCKSPAR	✓FR 23, IFB
	FR 26, IFB
	FR 28, IFB

Hazardous Ingredients**Section I****Ingredient**

Crystalline Silica

CAS Number

7631-86-9

Physical Data**Section II****Appearance & Color**

Tan-Geometric Solid

Odor & Solubility

Odorless, -insoluble in water and most acids

-soluble in hydrogen fluoride acid

Fire & Explosion Data**Section III**

This material is noncombustible. Use extinguishing media appropriate to the surrounding area

Health Hazard Data**Section IV**

Inhalation of all dusts are hazardous. Crystalline silica in the lungs can cause silicosis. This is a chronic slowly developing disease.

Reactivity**Section V**

This material is stable under ordinary conditions.

Emergency and First Aid Procedures**Section VI**

Terminate exposure. Consult with physician if affected.

Spill, Leak, and Disposal**Section VII**

Avoid inhalation of all dusts. Protect eyes. Consult with proper state, local, and federal authorities on waste removal regulations.

Special Protection Information**Section VIII**

Wear NIOSH approved safety masks, eye glasses, and gloves. Ventilate where necessary.

Special Precautions and Comments**Section IX**

None

Prepared By: I. Dulberg

Title: Technical Manager

Although reasonable care has been taken in the preparation of this MSDS, J. H. France Refractories Co. extends no warranties, makes no representation and assumes no responsibilities as to the accuracy or suitability of such information for application to the purchaser's intended purposes or for consequences of its use.

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CARBOFRAX

SOHIO MATERIAL SAFETY DATA SHEET



Sohio Emergency Phone (Toll-Free)

In Ohio: 800-362-8059

Outside Ohio: 800-321-8642

CHEMTREC Assist: 800-424-9300

Other Product Safety Info.: 216-575-8024

MANUFACTURER: Sohio Engineered Materials Company - Refractories Division
 ADDRESS: P. O. Box 187, Keasbey, New Jersey 08832

PRODUCT IDENTIFICATION

TRADE NAME: CARBOFRAX - COMPACTED and CAST

CAS NUMBER: Mixture

SYNONYM(S): Silicate Bonded Silicon Carbide Refractory

CHEMICAL FAMILY: Carbide

MOLECULAR FORMULA: NA

MOLECULAR WEIGHT: NA

SOHIO PRODUCT CODE: NA

HIERARCHY: NA

SDS NUMBER: AZ6

PRODUCT HAZARD SUMMARY

HEALTH MAY BE IRRITATING TO THE SKIN AND EYES
 OVEREXPOSURE TO DUST MAY CAUSE LUNG DAMAGE

NON-COMBUSTIBLE

ACTIVITY STABLE

PRODUCT HEALTH HAZARD INFORMATION

ROUTE OF EXPOSURE
 INGESTION:

No exposure under normal conditions of use.

EFFECTS OF OVEREXPOSURE

SKIN:

SLIGHTLY TO MODERATELY IRRITATING. Abrasive action may cause cuts and abrasions.

EYES:

SLIGHTLY TO MODERATELY IRRITATING. Abrasive action may cause damage to the outer surface of the eye.

INHALATION:

Dusts may cause respiratory tract irritation. Repeated or prolonged breathing of particles of respirable size may cause severe respiratory disease. Effects may include inflammation of the lung, chest pain, difficult breathing, coughing and possible fibrotic change in the lung--"Pneumoconiosis". Pre-existing medical conditions may be aggravated by exposure: specifically, bronchial hyper-reactivity and chronic bronchial lung disease.

SPECIAL TOXIC EFFECTS:

NONE

CERRO COPPER PRODUCTS COMPANY
 MSDS NUMBER - CCPC-00-0022
 APPROVALS:
 ENVIRONMENTAL: _____ (PRIOR)
 SAFETY: _____ (PRIOR)
 PURCHASING: _____ (PRIOR)

FIRST AID

INGESTION:

If victim is conscious, give 1-3 glasses of water or milk to dilute stomach contents. Get medical attention if irritation persists.

SKIN CONTACT:

Wash area of contact thoroughly with soap and water. Get medical attention if irritation persists.

EYE CONTACT:

Flush immediately with large amounts of water. Eye lids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation persists.

INHALATION:

Remove affected person from source of exposure. Get medical attention if irritation persists.

NOTES TO PHYSICIAN

ND

PERSONAL PROTECTION INFORMATION

EYE PROTECTION:

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye baths readily available where eye contact can occur.

SKIN PROTECTION:

Wear heavy gloves and safety shoes. Use good personal hygiene. Wear regularly cleaned work clothing. Showering and changing into street clothing after work is desirable.

RESPIRATORY PROTECTION:

Use NIOSH or MSHA approved equipment when airborne exposure limits are exceeded. NIOSH/MSHA approved breathing equipment may be required for non-routine and emergency use. Ventilation may be used to control or reduce airborne concentrations.

PHYSICAL PROPERTIES

MELTING POINT, C (F): NA

BOILING POINT, C (F): NA

VAPOR PRESSURE, mm Hg: NA

VAPOR DENSITY (AIR=1): NA

SOLUBILITY IN WATER, %: NA

SPECIFIC GRAVITY: 2.99-3.07

% VOLATILE: NA

EVAPORATION RATE (BUTYL ACETATE=1): NA

VISCOSITY, SUS: NA

POUR POINT: NA

pH: NA

APPEARANCE/ODOR: Odorless dark-grey, dark-red or yellow block.

FIRE AND EXPLOSION DATA

FLASH POINT, C (F): None

IGNITION TEMPERATURE, C (F): NA

FLAMMABILITY LIMITS IN AIR (% BY VOL.): LOWER: NA

UPPER: NA

= No Data

= Not Applicable

SIC FIREFIGHTING PROCEDURES: This material does not give a flash point by conventional test methods. Use extinguishing agent suitable for type of surrounding fire.
USUAL FIRE AND EXPLOSION HAZARDS: Dusts can form explosive mixtures in air.

REACTIVITY DATA

STABILITY/INCOMPATIBILITY:

Stable under normal conditions of use. Incompatible with chlorine trifluoride and oxidizers..

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

NA

ENVIRONMENTAL INFORMATION

SPILL OR RELEASE TO THE ENVIRONMENT:

No special procedures are required for clean-up of spills or leaks of this material. Avoid methods that result in water pollution. Caution should be exercised regarding personnel safety and exposure to the spilled material, as set forth elsewhere in this data sheet.

WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:

NO

TRANSPORTATION REQUIREMENTS

D.O.T. HAZARD CLASS (49 CFR 172.101): NA

D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): NA

D.O.T. LABELS REQUIRED (49 CFR 172.101): NA

D.O.T. PLACARDS REQUIRED: NA

PL OF LADING DESCRIPTION: NO

./NA CODE: NA

INGREDIENT/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REFERENCE
Silicon carbide	409-21-2	80-90	5 mg/M ³ (resp); 15 mg/M ³ (total) PEL, as nuisance dust (OSHA 1978) 5 mg/M ³ (resp); 10 mg/M ³ (total) TLV: 20 mg/M ³ STEL, as nuisance dust (ACGIH 1984-85)
Alumina	1344-28-1	0-5	As nuisance dust (see Silicon carbide)
Silicon dioxide (crystalline)	60676-86-0	5-10	*see below
Calcium oxide	1305-78-8	0-1	5 mg/M ³ PEL (OSHA 1978) 2 mg/M ³ TLV (ACGIH 1984-85)
Iron oxide	1309-37-1	0-1	5 mg/M ³ TLV; 10 mg/M ³ STEL (dust or fume, as Fe) (ACGIH 1984-85)
Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).	Mixture	Trace	NA

*OSHA PEL for crystalline silica is calculated as:

$$(\text{respirable dust}) \text{ PEL} = \frac{10 \text{ mg/M}^3}{\% \text{quartz} + 2(\% \text{cristobalite}) + 2(\% \text{tridymite})}$$

ACGIH TLV for crystalline silica is calculated as:

$$(\text{respirable dust}) \text{ TLV} = \frac{10 \text{ mg/M}^3}{\% \text{quartz} + 2}$$

$$(\text{total dust}) \text{ TLV} = \frac{30 \text{ mg/M}^3}{\% \text{quartz} + 3}$$

EFFECTIVE DATE: 10/16/85
REPLACES SHEET DATED:

COMPLETED BY: G. R. Krautter
APPROVED BY: *R. W. Mast*

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

① HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

APPROVALS:
ENVIRONMENTAL: _____
HEALTH: _____
SAFETY: _____
TRAINING: _____

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA LIQ 50% DIAPH DATE: 12/17/88 PAGE 01
PRODUCT CODE: 16-08026-03

CAS # 001310-73-2

FORMULA: NaOH

CHEMICAL FAMILY: Alkali

CHEMICAL NAME AND SYNONYMS: Sodium Hydroxide, Lye Solution,
Soda Lye, Caustic Soda 50% Rayton Grade.

SUPPLIERS NAME: Harcros Chemicals Inc
5200 Speaker Rd
Kansas City

Ks 66106

SUPPLIERS PHONE NUMBER: 913-321-3131

TRANSPORTATION EMERGENCY PHONE NUMBER: 1-800-424-9300

S.A.R.A. INFORMATION

HAZARDS: Fire: Pressure: Reactivity: Acute: Yes Chronic:
PHYSICAL DATA: Mixture: Yes Pure: Solid: Liquid: Yes Gas:

SECTION I Hazardous Ingredients

Ingredient	Percent	TLV
SODIUM HYDROXIDE	50%	PEL/TWA 8Hr 2 mg/m(3) OSHA TLV/TWA 8Hr 2 mg/m(3) Ceiling-ACGIH

*NIOSH recommendation - 2 mg/m(3) 15 min. ceiling.

SECTION II Health Hazards

Threshold Limit Value: As indicated in Section I.

Potential Effects of Exposure:

Eyes: Major Potential Hazard: Caustic soda is destructive to eye tissue on contact. Will cause severe burns that result in damage to the eyes and even blindness. These effects can occur rapidly, affecting all parts of the eye.

Skin: Major Potential Hazard: Caustic soda is destructive to tissues contacted, producing severe burns and temporary loss of hair. Chronic overexposure may consist of multiple areas of superficial destruction of the skin or dermatitis. 4% solution may not cause irritation and burning for several hours, while 25-50% solutions can cause these effects in less than 3 minutes.

Inhalation: Airborne concentrations of dust, mist, or spray of caustic soda may cause mild irritation at 2mg/m(3) and at higher concentrations, damage to the upper respiratory tract and even to the lung tissue proper which could produce chemical pneumonia, depending upon severity of exposure. Chronic overexposure to spray or mist may result in irritation or tissue damage.

Ingestion: Caustic soda can cause severe burns, pain and complete tissue perforation of mucous membranes of the lips,

HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA LIQ 50% DIAPH
PRODUCT CODE: 16-08026-03

DATE: 12/17/88 PAGE 02

SECTION II Health Hazards

CONTINUED

mouth, tongue, throat, esophagus, and stomach if swallowed. Severe scarring of the throat can occur after swallowing. Can be fatal.

First aid:

Eyes: Immediately flush eyes with large quantities of water, periodically lifting upper and lower lids to ensure washing of entire surface. Washing eyes within one minute is essential to achieve maximum effectiveness. Seek medical attention immediately. Contact lenses should not be worn when working with this chemical.

Skin: Immediately wash contaminated skin with plenty of water. If skin feels slippery caustic may be present in sufficient quantities to cause rash or burn, continue washing until slippery feeling is gone. If wearing goggles flush head and face thoroughly before removing goggles. Remove contaminated clothing under the shower. This washing may be followed with a rinse of vinegar or dilute acetic acid (3% solution) if available. Remove contaminated clothing and footwear and wash clothing before re-use. Discard footwear which cannot be decontaminated. Seek medical attention immediately.

Inhalation: Get person out of contaminated area to fresh air. If breathing has stopped, artificial respiration should be started. Oxygen may be administered, if readily available. Seek medical attention immediately.

Ingestion: If swallowed, DO NOT induce vomiting. Give large quantities of water. If available, give several glasses of milk. Never give anything by mouth to an unconscious person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Seek medical attention immediately.

Other Information:

HEALTH HAZARD DATA:

Acute LC(50): >0.018 <0.20 mg/l
Oral Acute LD(50)(rat): 140 - 340 mg/kg
Dermal Acute LD(50) (Rabbit): 1350 mg/kg

Sodium Hydroxide is not listed on the IARC, NTP or OSHA carcinogen lists.

Medical Conditions aggravated by Exposure:

May aggravate existing skin and/or eye conditions on contact.

Reproductive Toxicity: NO studies were identified relative to sodium hydroxide and reproductive toxicity.

NOTES TO PHYSICIAN:

CORROSIVE! May cause stricture. If lavage is performed, suggest endotracheal and/or esophagoscopy control.

SECTION III Special Protection Information

Respiratory Protection: For exposures above PEL/TLV and up to 50 mg/m(3) use either any powered air-purifying respirator with dust and mist filter, or any supplied air respirator operating

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HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA LIQ 50% DIAPH
PRODUCT CODE: 16-08026-03

DATE: 12/17/88 PAGE 03

SECTION III Special Protection Information CONTINUED
in a continuous flow mode. In either case eye protection must be worn. For this recommendation and for protection at higher rates of exposure, see Ref (1) Sec IX.

Ventilation Required: Provide ventilation adequate to maintain airborne concentrations below OSHA limits of 2 mg/m³. Local exhaust ventilation preferred where dilutions or reactions cause misting, or solid caustic soda ground up and dust generated. Air concentration of carbon monoxide formed by reaction of caustic soda and reducing sugars should not exceed 50 ppm for an 8 hr TWA. Ventilation equipment should be corrosion-resistant, and, if hydrogen may be generated, explosion-proof.

Protective Clothing:

Eyes: Chemical splash goggles and face shield should be worn whenever exposure possible. Have eye baths immediately available where eye contact can occur.

Skin: Gloves coated with rubber, PVC, or other plastic required, also hard hats, safety shoes, and rubber boots, along with rubber apron when handling caustic soda. Provide a safety shower at any location where skin contact can occur. Sleeves should be worn over gloves and trouser cuffs over rubber boots to avoid skin contact. Caustic soda attacks wool.

Additional Protective Measures: Neutralization supplies, (3% acetic acid preferably) and abundant running water should be close at hand in working and storage areas.

SECTION IV Fire & Explosion Hazard Data

Flash Point (Method): None

Flammable Limits (% Volume in Air):

Upper: Non-Flammable

Lower: Non-Flammable

Extinguishing Media: Use carbon dioxide, "alcohol" foam or dry chemicals where caustic soda is used or stored.

Special Fire Fighting Procedures: Pressure-demand self-contained respiratory protection and protective clothing should be worn by firefighters. Thoroughly decontaminate equipment after use.

Unusual Fire and Explosion Hazards: Highly flammable hydrogen is formed by reaction of concentrated caustic soda with aluminum, tin, zinc, and alloys which contain these metals. See Section IX in regard to violent reaction when water added to concentrated caustic soda.

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HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA LIQ 50% DIAPH
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SECTION V Physical Data

Boiling Point: 289 deg. F

Specific Gravity (H₂O=1): 1.54 @ 15.6 deg. C

Vapor Pressure (MM HG.): 6.3 @ 104 deg. F.

Vapor Density (AIR=1): N/A

Evaporation Rate (Butyl Acetate=1): N/A

Solubility in Water: Complete

Percent Volatile by Volume: Approx 50

pH: 1% aqueous solution - approx. 13

Freezing Point: 55 deg. F

Appearance and Odor: Liquid, clear or opaque, colorless to slightly colored; no odor.

SECTION VI Reactivity Data

Stability: Stable in normal use, in a sealed container.

Incompatibility: With strong acids, without dilution or agitation, will produce a violent or explosive reaction. Will react with acrolein, hydroquinone, chlorine trifluoride, maleic anhydride, phosphorus pentoxide, tetrahydrofuran, leather and wool, also aluminum, zinc, tin, and alloys containing these metals, nitrocarbons, halocarbons, aldehydes, etc. (Trichlorethylene will react to form spontaneously flammable dichloroacetylene). Will react with some metals forming flammable hydrogen gas.

Hazardous Decomposition Products: Caustic soda reacts with reducing sugars (e.g. in food soils when used in cleaning compounds) to form hazardous carbon monoxide. Before entering closed or semi-closed areas, after cleaning, test and monitor space for carbon monoxide.

Hazardous Polymerization: Will not occur.

SECTION VII Spill and Leak Procedures

Steps to be taken if material is released or spilled: Clean-up workers must use protective clothing and equipment to prevent body contact. Running water should be available for emergency use. Preferred clean-up procedure - dam up spill, cover with sand or inert porous material, transfer into caustic-resistant containers (labelled "Corrosive"). Avoid flushing chemical into public sewer or water systems. Flush clean-up area with water. Dilute acid, preferably acetic acid may be used to neutralize final traces of caustic (observe appropriate safety precautions for handling acid solutions). Small spills may be neutralized with dilute acidic solution (dilute-acetic or 6

HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA LIQ 50% DIAPH
PRODUCT CODE: 16-08026-03

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SECTION VII Spill and Leak Procedures

CONTINUED

molar hydrochloric acid) before flushing away. For large spills pick up spill with vacuum equipment (alkali resistant) for disposal, or flush to holding area with water, prior to neutralization. Notify local health and pollution control officials if flushed spillage unavoidably enters public sewers or other water systems. If spill occurs into navigable water, notify U.S. Coast Guard. Caution! Spill area will be slippery. Spills of 1000 lbs or more must be reported to the National Response Center - Phone: (800)424-8802.

Waste Disposal Method: If not diluted and neutralized, this product can become a hazardous waste as designated by the Environmental Protection Agency under authority of the Resource Conservation and Recovery Act (RCRA). The waste would have RCRA Hazardous Waste number D002 (Corrosive) as designated in 40 CFR 261.22. Federal, state and local regulations should be followed in disposing of this substance.

Aquatic toxicity: 125 ppm/96 hr./mosquito fish/TLM/fresh water.
180 ppm/23 hr./oysters/lethal/salt water.
Ref (2) Sec IX

SECTION VIII D.O.T. Shipping Information

Proper Shipping Name: SODIUM HYDROXIDE LIQUID OR SOLUTION
Hazard Class: CORROSIVE MATERIAL
ID Number: UN1824
Label Requirements: CORROSIVE
Reportable Quantity: SHIPMENTS OF 02000 LBS OR MORE ARE REPORTABLE
Other Information:

SECTION IX Additional Information

This information may be of importance to you:

FURTHER PRECAUTIONARY MEASURES:

Keep container closed. Avoid contact with strong acids to prevent violent or explosive reactions. Do not allow water to get into container because of violent reaction with concentrated caustic soda.

When diluting, add Caustic Soda slowly with agitation to surface of solution to avoid violent splattering, boiling and eruption. Water should always be lukewarm (80-100 deg. F), never start with hot or cold water.

Emptied container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Minimize skin contact. Wash with soap and water before eating,

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HARCROS CHEMICALS INC
KANSAS CITY, KANSAS

MATERIAL SAFETY DATA SHEET

PRODUCT NAME: CAUSTIC SODA LIQ 50% DIAPH
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SECTION IX Additional Information CONTINUED
drinking, smoking or using toilet facilities.

References:

- (1) NIOSH/OSHA Pocket Guide to Chemical Hazards DHHS(NIOSH)
Publication No. 85-114.
- (2) U.S. Coast Guard CHRIS Manual; Entry: Sodium Hydroxide.

NPCA/HMIS RATING:

Health-3
Flammability-0
Reactivity-1
Special Protection-H

***** E N D O F R E P O R T *****

NAME: GENE TURNER

DATE ISSUED: 10/25/1987
DATE REVISED: 11/23/1987

< = LESS THAN
> = MORE THAN

N/A = NOT APPLICABLE
N/D = NOT DETERMINED
N/E = NOT ESTABLISHED

UNK = UNKNOWN

The information provided in this Material Safety Data Sheet has been obtained from sources believed to be reliable. Harcros Chemicals Inc provides no warranties, either expressed or implied and assumes no responsibility for the accuracy or completeness of the data contained herein. This information is offered for your information, consideration and investigation. You should satisfy yourself that you have all current data relevant to your particular use. Harcros Chemicals Inc knows of no medical condition, other than those noted on this material safety data sheet, which are generally recognized as being aggravated by exposure to this product.

Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

U.S. Department of Labor

Occupational Safety and Health Administration
(Non-Mandatory Form)



CINCINNATI 30
CERRA COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0009

IDENTITY (As Used on Label and List)
CIMCLEAN 30

APPROVALS:
ENVIRONMENTAL: _____
SAFETY: _____
-PREPARED: _____
no
hat

Section I

Manufacturer's Name Products Division/
Cincinnati Milacron Marketing Company

Emergency telephone number

513-841-8181

Address (Number, Street, City, State, and ZIP Code)
4701 Marburg Avenue

Telephone Number for Information

513-841-8964

Cincinnati, Ohio 45209

Date Prepared

10/85

Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
Ethanolamine	3 ppm	3 ppm		
Boric Acid	---	---		
Ethoxylated nonylphenol	---	---		
Pelargonic Acid	---	---		

The ingredients listed above may contribute to the product hazard as listed
in Section VI of this sheet.

Section III — Physical/Chemical Characteristics

Boiling Point	212°F	Specific Gravity (H ₂ O = 1)	1.089
Vapor Pressure (mm Hg.) Not applicable (NA)	NA	Melting Point	NA
Vapor Density (AIR = 1)	NA	Evaporation Rate (Butyl Acetate = 1)	like water
Solubility in Water	100%		
Appearance and Odor	clear; chemical		

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used) None; self-extinguishing	Flammable Limits NA	LEL NA	UEL NA
Extinguishing Media No fire hazard			
Special Fire Fighting Procedures NA			

Unusual Fire and Explosion Hazards

None

Section V — Reactivity Data

CIMCLEAN 30

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid)

Avoid contact of concentrate with strong acids.

Hazardous Decomposition or Byproducts

None.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	YES	Skin?	YES	Ingestion?	NA
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Health Hazards (Acute and Chronic)

DANGER: Concentrate is highly alkaline. Concentrate is orally toxic. Concentrate is a primary skin irritant. Concentrate is an eye irritant. No adverse chronic effects expected when used as recommended.

Carcinogenicity:	NTP?	NO	IARC Monographs?	NO	OSHA Regulated?	NO
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Signs and Symptoms of Exposure

If concentrate is swallowed, may cause abdominal pain, vomiting, severe inflammation of mouth, throat, stomach and mucous membranes. A reversible skin irritation (redness and swelling) may occur from contact with concentrate. Eye damage may occur from contact with concentrate.

Medical Conditions

Generally Aggravated by Exposure

May aggravate existing skin irritation where further defatting or skin penetration could occur.

Emergency and First Aid Procedures

In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Thoroughly flush with water to sewer.

Waste Disposal Method

FOR USED MIX: 1) Ultrafiltration for sewer disposal, or 2) recycle equipment for reuse, or 3) treat with polymer or inorganic deemulsifiers, then dispose of top layer by incineration or landfill, and dispose of water layer in sanitary sewer. FOR UNUSED CONCENTRATE: Incinerate, or contact vendor.

Precautions to Be Taken in Handling and Storing

Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. If frozen, thaw completely at room temperature.

Other Precautions

Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII — Control Measures

Respiratory Protection (Specify Type)

Product not volatile.

Ventilation	Local Exhaust	Special
	Mechanical (General)	Other
	General	

Protective Gloves	Waterproof gloves required	Eye Protection	Safety shield or goggles required
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Other Protective Clothing or Equipment

Effective metalworking plant protective clothing as appropriate.

Work/Hygiene Practices

Good personal hygiene should always be followed.

Material Safety Data Sheet

May be used to comply with
OSHA's Hazard Communication Standard,
29 CFR 1910.1200. Standard must be
consulted for specific requirements.

CIMPERIAL 1011

CERRO COPPER PRODUCTS COMPANY

MSDS NUMBER - CCPC-00-0040

APPROVALS:

ENVIRONMENTAL _____
SALES _____
OTHER _____



IDENTITY (As Used on Label and List)

CIMPERIAL 1011

Note: Blank spaces are not permitted. If any item is not applicable, or no
information is available, the space must be marked to indicate that.

Section I

Manufacturer's Name	Products Division/	Emergency Telephone Number
Cincinnati Milacron Marketing Company		513-841-8181
Address (Number, Street, City, State, and ZIP Code)		Telephone Number for Information
4701 Marburg Avenue		513-841-8964
		Date Prepared
Cincinnati, Ohio 45209		10/85
		Signature of Preparer (optional)

Section II — Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity, Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
O-phenylphenol	---	---		
Triethanolamine	---	---		
Ethoxylated nonylphenol	---	---		
Mineral oil (mist)	5 mg/M3	5 mg/M3		

The ingredients listed above may contribute to the product hazard as listed
in Section VI of this sheet.

Section III — Physical/Chemical Characteristics

ND = not determined

Boiling Point	ND	Specific Gravity (H ₂ O = 1)	1.006
Vapor Pressure (mm Hg.)	NA	Melting Point	NA
Not applicable (NA)	NA	Evaporation Rate	NA
Vapor Density (AIR = 1)	NA	(Butyl Acetate = 1)	NA

Solubility in Water appreciable; emulsifiable

Appearance and Odor

Hazy; evergreen or sassafras

Section IV — Fire and Explosion Hazard Data

Flash Point (Method Used)	Flammable Limits	LEL	UEL
370°F (COC)	NA	NA	NA

Extinguishing Media

Foam, carbon dioxide

Special Fire Fighting Procedures

Unusual Fire and Explosion Hazards

Section V — Reactivity Data

CINPERIAL 1011

Stability	Unstable		Conditions to Avoid
	Stable	X	

Incompatibility (Materials to Avoid)

None known

Hazardous Decomposition or Byproducts

None.

Hazardous Polymerization	May Occur		Conditions to Avoid
	Will Not Occur	X	

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	YES	Skin?	YES	Ingestion?	NA
--------------------	-------------	-----	-------	-----	------------	----

Health Hazards (Acute and Chronic) WARNING: Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. Eye damage may occur from contact with concentrate. No adverse chronic effects expected when used as recommended.

Carcinogenicity:	NTP?	NO	IARC Monographs?	NO	OSHA Regulated?	NO
------------------	------	----	------------------	----	-----------------	----

Signs and Symptoms of Exposure Eye damage may occur from contact with concentrate. This product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix).

Medical Conditions May aggravate existing skin irritation where further defatting or Generally Aggravated by Exposure skin penetration could occur.

Emergency and First Aid Procedures In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

Thoroughly flush with water to sewer.

Waste Disposal Method Ultrafiltration or acid-alum-polymer chemical treatment (followed by phenol-removing procedures, if required), or high temperature incineration.

Precautions to Be Taken in Handling and Storing Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. Avoid of flames, sparks, and temperatures over 370°F. If frozen, thaw completely at room temp.

Other Precautions

Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII — Control Measures

Respiratory Protection (Specify Type)

Product not volatile.

Ventilation	Local Exhaust	Special
	Mechanical (General) General	Other

Protective Clothing Waterproof gloves required when handling concentrate. **Eye Protection** Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment

Effective general working plant protective clothing as appropriate.

Working Practices

Good personal hygiene should always be followed.

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration

Form Approved
OMB No. 44-R1387

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME Manufactured for: 3C Company		EMERGENCY TELEPHONE NO. 314 291-1174
ADDRESS (Number, Street, City, State, and ZIP Code) 382 Fee Fee Rd. Maryland Heights, MO 63043		
CHEMICAL NAME AND SYNONYMS C33MDS		TRADE NAME AND SYNONYMS Solvent Cleaner
CHEMICAL FAMILY Chlorinated Hydrocarbons	FORMULA	

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
Chlorinated Hydrocarbons	100	100
8 hour TWA - 100 ppm, acceptable ceiling concentration- 200 ppm, acceptable maximum peak above the acceptable ceiling concentration for an 8 hour shift - 300 ppm concentration, maximum duration = 5 minutes in any 3 hours		

SECTION III - PHYSICAL DATA

BOILING POINT XX 1760 mm. Hg	165-250°F	SPECIFIC GRAVITY (H ₂ O=1)	1.40
VAPOR PRESSURE (mm Hg.)		PERCENT. VOLATILE BY VOLUME (%)	100%
VAPOR DENSITY (AIR=1)	4.85	EVAPORATION RATE Butyl Acetate=1	.30
SOLUBILITY IN WATER % by wt. @20° C.	0.05		
APPEARANCE AND ODOR Colorless appearance, ethereal odor			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) NONE (Tag open or closed)	FLAMMABLE LIMITS	Let	Uet
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES Self-contained respiratory protection should be used by firemen fighting fires in buildings in which C33MDS is stored.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Vapors can be ignited only by high intensity source of ignition. Combustion forms HCl and possible traces of phosgene.			

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0047

APPROVALS
ENVIRONMENTAL
SAFETY

IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	100 PPM
EFFECTS OF OVEREXPOSURE	Alcoholics, persons who are extremely over or underweigh and those with disease of the lungs, liver, kidneys or heart or with high blood pressure or with chronic skin conditions should not be exposed to C33MDS .
EMERGENCY AND FIRST AID PROCEDURES	Inhalation - Lower concentrations or exposure for short periods cause light headedness, dizziness and mental dullness, headache and nausea. Extremely high vapor concentration may cause unconsciousness and even death in unventilated areas such as tanks.
FIRST AID	<p>Move to fresh air, use artificial respiration if breathing has stopped. Administer oxygen after breathing has been restored. <u>Never administer adrenalin.</u> Call physician. He should <u>not</u> administer adrenalin.</p> <p>Ingestion - Make person vomit by drinking mustard water lukewarm salt water or soapy warm water. Repeat three times, then follow with a tablespoon of Epsom Salt. Call physician at once.</p> <p>Skin - Remove all contaminated clothing. Wash all affected areas with warm soap and water. Apply lanolin ointment. In serious cases, call physician.</p>

V. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID	Alkali metals, open flames, welding arcs and explosive mixtures with oxygen under pressure.
UNSTABLE	STABLE		
X			
INCOMPATIBILITY (materials to avoid)		Do not store in aluminum tanks.	
HAZARDOUS DECOMPOSITION PRODUCTS		HCl and small amounts of phosgene.	
HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID	
Will Occur	Will not Occur		
	X		

VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN
IF MATERIAL IS RELEASED
SPILLED

Adequate ventilation must be provided. Workmen should be provided with fresh air masks or sent to fresh air.

WASTE DISPOSAL METHOD

Spills or leaks should be cleaned up immediately. Use forced ventilation or evaporation. If this is not possible, mop up. When wet, mops and rags should be placed in closed containers until they can be dried safely.

VII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION
(specify type)

Fresh air mask or self-contained breathing apparatus.

VENTILATION

LOCAL EXHAUST

Sufficient to maintain TLV

SPECIAL

MECHANICAL
(general)

OTHER

PROTECTIVE GLOVES

Neoprene or Viton

EYE
PROTECTION

Chemical safety
goggles

OTHER PROTECTIVE
EQUIPMENT

Neoprene apron

VIII. SPECIAL PRECAUTIONS

PRECAUTIONARY LABELING

OTHER HANDLING AND
STORAGE CONDITIONS

Do not store in direct sunlight or in excessively hot areas. When opening bungs, open slowly and gradually to relieve pressure. Do not store in pits, depressions or unventilated areas.

3C COMPANY
382 FEE FEE ROAD
MARYLAND HEIGHTS, MO 63043
(314) 291-1174

DATA SHEET FOR 33MDS

PRODUCT DATA AND APPLICATION

33MDS is a cold degreasing solvent used to clean deposits of grease, oil and other soils. 33MDS is completely non-flammable throughout its entire range of evaporation and is non-corrosive to all metals. Because of its strong cleaning action, it is recommended that 33MDS first be tested on any painted surface prior to use.

Evaporation Rate:	1-3 minutes
Flash Point:	None at any level of evaporation (COC)
Explosive Limits:	Lower & Upper - None
Boiling Point:	160° F.
Color:	Clear; Water White.

HANDLING PROCEDURES

33MDS contains chlorinated solvents and should be handled as follows:

- 1) Use with adequate ventilation.
- 2) Although 33MDS is non-flammable and non-explosive, spills should be cleaned immediately and disposed of properly.
- 3) Do not use in closed areas without ventilation. 33MDS is toxic by inhalation and repeated or prolonged contact with skin. Wash exposed areas with soap and water.
- 4) In case of contact with eyes, wash copiously with water for 15 minutes. Get medical attention.
- 5) Do not take internally. In case of ingestion, make person vomit and call physician immediately.
- 6) Avoid contact with strong alkalis such as sodium hydroxide.

SECTION I NAME AND PRODUCT

MANUFACTURER: BORIDE PRODUCTS, INC.
 ADDRESS: 2879 AERO PARK DRIVE
 TRAVERSE CITY, MICHIGAN 49684

TRADE NAME AND SYNONYMS: VITREOUS BONDED ALUMINA, ABRASIVE PRODUCTS,
 DRESSING STICKS, MOLD AND DIE POLISHING STONES

CHEMICAL NAME: VITRIFIED ALUMINUM OXIDE

CONTACT: TIM JOHNSON

PHONE: 616/946-2100

DATE: NOVEMBER 1985

APPROVED
BY*Charles Kilgus*

CHEMICAL FAMILY: OXIDE, GLASS

SECTION II COMPOSITION

MATERIAL	CAS #	PERCENT BY WEIGHT	TLV
ALUMINUM OXIDE	1344-28-1	+ 50%	10 mg/m ³
GLASS	NA	+ 5%	10 mg/m ³
MAY CONTAIN ONE OR MORE OF THE FOLLOWING			
SULFUR	7704-34-9	+ 1%	10 mg/m ³
CURED RESIN	NA	+ 1%	10 mg/m ³
SILICATE	NA	+ 1%	10 mg/m ³

SECTION III PHYSICAL AND CHEMICAL DATA

APPEARANCE AND ODOR: RED, PINK, BROWN, GRAY, BLUE OR WHITE SOLID; NO ODOR.

BOILING POINT: NA

VAPOR PRESSURE (mm Hg): NA

VAPOR DENSITY (Air=1): NA

SOLUBILITY IN WATER: NA

SPECIFIC GRAVITY (H₂O=1): Varies

PERCENT VOLATILE BY VOLUME: 0

EVAPORATION RATE (Air=1): NA

HOW BEST MONITORED: Air Sample

SECTION IV SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Maintain good housekeeping procedures to prevent dust accumulation during grinding. Avoid dust inhalation and direct skin contact with dust.

OTHER PRECAUTIONS: Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the PEL or TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing, rags, or other items.

Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

SECTION V CORROSIVITY AND REACTIVITY DATA

STABILITY:	UNSTABLE	STABLE X	CONDITIONS TO AVOID:	N/A
INCOMPATIBILITY:	CONTACT OF DUST WITH STRONG OXIDIZERS MAY CAUSE FIRE OR EXPLOSIONS		MATERIALS TO AVOID:	STRONG ACIDS
HAZARDOUS DECOMPOSITION PRODUCTS:	NONE		HAZARDOUS POLYMERIZATION:	MAY OCCUR
CONDITIONS TO AVOID:	N/A			WILL NOT OCCUR X

SECTION VI HEALTH, FIRST AID AND MEDICAL DATA

GRINDING TOOLS BREAK DOWN DURING USE AND THE RESULTING DUST IS CLASSIFIED BY OSHA AS INERT OR NUISANCE DUST AND WOULD HAVE THE PULMONARY EFFECTS OF INERT DUST. DUST MAY BE INHALED OR COME IN CONTACT WITH SKIN OR EYES.

ROUTES OF EXPOSURE	EFFECTS OF OVEREXPOSURE	EMERGENCY AND FIRST AID PROCEDURES
INHALATION	DUST FROM GRINDING CAN CAUSE IRRITATION OF NOSE AND THROAT	(APPLICABLE FOR DUSTS OR MISTS) IF SYMPTOMS OF PULMONARY INVOLVEMENT DEVELOP (COUGHING, WHEEZING, SHORTNESS OF BREATH, ETC.), REMOVE FROM EXPOSURE AND SEEK MEDICAL ATTENTION
SKIN CONTACT	IRRITATION OR RASH MAY OCCUR	WASH AFFECTED AREA WITH SOAP AND WATER AND ISOLATE FROM EXPOSURE. IF RASH PERSISTS, SEEK MEDICAL ATTENTION
EYE CONTACT	IRRITATION MAY OCCUR	FLUSH WITH COPIOUS AMOUNTS OF WATER. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION
INGESTION		IF SUBSTANTIAL QUANTITIES ARE SWALLOWED, DILUTE WITH LARGE AMOUNT OF WATER, INDUCE VOMITING AND SEEK MEDICAL ATTENTION
CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER): None of the components of this material have been identified as known or suspected carcinogens by NTP, IARC or OSHA.		

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Ventilate area of spill. Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the PEL or TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

WASTE DISPOSAL METHOD:

Dispose of in accordance with appropriate government regulations

SECTION VIII PERSONAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the appropriate PEL or TLV. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

VENTILATION:

Use local exhaust ventilation which is adequate to limit personal exposure to respirable airborne dust to levels which do not exceed the PEL or TLV. If such equipment is not available use respirators as specified above.

PROTECTIVE GLOVES:

Protective gloves or Barrier cream are recommended when contact with dust or mist is likely. Prior to applying the Barrier cream or use of protective gloves, wash thoroughly.

EYE PROTECTION:

Safety glasses with side shields or goggles are recommended.

SECTION IX FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A TEST METHOD USED: --- FLAMMABLE LIMITS: N/A LEL: --- UEL: ---

HARD ALUMINUM OXIDE PRODUCT IS NOT A FIRE HAZARD. DUSTS GENERATED IN GRINDING OPERATIONS MAY IGNITE IF ALLOWED TO ACCUMULATE.

EXTINGUISHING MEDIA: FOR POWDER FIRES, USE DRY SAND, DRY DOLOMITE, DRY GRAPHITE POWDER.

SPECIAL FIRE FIGHTING PROCEDURES:

FOR A POWDER FIRE CONFINED TO A SMALL AREA, USE A RESPIRATOR APPROVED FOR TOXIC DUSTS AND FUMES. FOR A LARGE FIRE, FIRE FIGHTERS SHOULD USE SELF-CONTAINED BREATHING APPARATUS.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

DUSTS MAY PRESENT A FIRE OR EXPLOSION HAZARD UNDER RARE FAVORING CONDITIONS OF PARTICLE SIZE, DISPERSION AND STRONG IGNITION SOURCE; HOWEVER, THIS IS NOT EXPECTED TO BE A PROBLEM UNDER NORMAL HANDLING CONDITIONS.

FOR COMPANY USE

Although BORIDE PRODUCTS, INC. has attempted to provide current and accurate information herein, BORIDE PRODUCTS, INC. makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, or injury of any kind, which may result from, or arise out of, the use of or reliance on, the information by any person.

REVISIONS
DATE
BY
REASON

SECTION I

MANUFACTURER'S NAME : WM. R. HALL CO. PHONE : 609/784-6700
ADDRESS : 901 GIBBSBORO ROAD
LINDENWOOD, NJ 08021
CHEMICAL NAME : RUBBER BONDED ABRASIVE WHEELS & DRESSING STICKS

SECTION II - HAZARDOUS INGREDIENTS

NONE

SECTION III - PHYSICAL DATA

NOT APPLICABLE

SECTION IV - FIRE AND EXPLOSION DATA

NONE

SECTION V - HEALTH HAZARD DATA

WHEEL SWarf IS A NUISANCE DUST. NO TLV ESTABLISHED.

SECTION VI - REACTIVITY DATA

STABLE WITH NO HAZARDOUS POLYMERIZATION OCCURRING.

SECTION VII - SPILL OR LEAK PROCEDURES

NOT APPLICABLE

SECTION VIII - SPECIAL PROTECTION INFORMATION

WHEEL OPERATION SHOULD BE CONDUCTED IN A VENTILATED AREA. TO AVOID INHALATION OF DUST GENERATED BY GRINDING, AN APPROPRIATE DUST MASK SHOULD BE WORN.
EYE PROTECTION - GOGGLES WITH SIDE SHIELDS
OTHER PROTECTIVE EQUIPMENT - IF APPROPRIATE, WHEEL GUARDS, DUST COLLECTORS

SECTION IX - SPECIAL PRECAUTIONS

RECOMMENDATIONS CONCERNING WHEEL SPEEDS, FLANGES, STORAGE AND OTHER FACTORS AFFECTING OPERATIONAL SAFETY SHOULD BE FOLLOWED PURSUANT TO A.N.S.I. B7.1.

MATERIAL SAFETY DATA SHEET : STEEL T.

(073499-0583M -40135925-22112500) DATE OF ISSUE 06/03/88 SUPERSEDES 06/03/88

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS
N/A

TRADE NAME & SYNONYMS
STEEL TROWEL MIX

CHEMICAL FAMILY
EPOXY COMPOUND

FORMULA
X<--MIXTURE

MANUFACTURERS NAME
DYNA SYSTEMS A PARTSMaster CO DIV OF NCH

ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
P.O. BOX 855325
DALLAS, TEXAS 75285-5325

PREPARED BY
RICHARD STOLLEY/T.S.CHEM.

PRODUCT CODE NUMBER
22112500

EMERGENCY TELEPHONE NUMBER
214-438-1381

SECTION II - HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	REL*	CAS#
PART A: DIGLYCIDIAL ETHER				
OF BISPHENOL A	IRRITANT	NOT EST.	N/A	1675-54-3
PART B: DIETHYLENETRIAMINE	IRRITANT	1PPM 1.	N/A	111-40-0

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	N/A	SPEC GRAVITY (H2O=1)	A=1.1, B=1.5
VAPOR PRESSURE (MM HG)	N/A	COLOR	A: GREY B: BLUE

STEEL TROWEL MIX

(CONTINUED)

SECTION III - PHYSICAL DATA

PAGE : 02

VAPOR DENSITY (AIR=1)	A=1	ODOR	PUNGENT
PH @ 100%	N/A	CLARITY	OPAQUE
PERCENT VOLATILE BY VOLUME (%)	0-1.0	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	NEGLECTIBLE		
VISCOSITY	VISCIDUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	A>280 FCLOSED CUP	FLAMMABLE LIMITS	N/A	LEL	N/A	UEL
EXTINGUISHING MEDIA	"ALCOHOL"	DRY	WATER			
X<--FOAM	X<--FOAM	X<--CO2	X<--CHEMICAL	X<--SPRAY		<--OTHER

SPECIAL FIRE FIGHTING PROCEDURES
WEAR NIOSH/MSHA APPROVED RESPIRATOR WHEN FIGHTING FIRES IN CONFINED AREAS TO PROTECT FROM ACID SMOKE, FUMES AND HAZARDOUS DECOMPOSITION PRODUCTS.

UNUSUAL FIRE & EXPLOSION HAZARDS
COOL FIRE EXPOSED CONTAINERS WITH WATER SPRAY TO PREVENT POSSIBLE RUPTURE.

NFPA HAZARD RATING (0=INSIGNIFICANT; 1=SLIGHT; 2=MODERATE; 3=HIGH; 4=EXTREME):
2 <--HEALTH 1 <--FLAMMABILITY 0 <--REACTIVITY <--SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :

NOT ESTABLISHED FOR MIXTURE SEE SECTION II

EFFECTS OF OVEREXPOSURE

- ACUTE - (SHORT TERM EXPOSURE)
PROLONGED OR REPEATED EXPOSURE MAY CAUSE SKIN SENSITIZATION. IN SENSITIVE INDIVIDUALS CONTACT MAY CAUSE SKIN IRRITATION. THIS PRODUCT IS BOTH MECHANICALLY IRRITATING AND CHEMICALLY IRRITATING TO THE EYES. INHALATION IS NOT A HAZARD IN NORMAL USE HOWEVER THIS PRODUCT GIVES OFF TOXIC FUMES WHEN BURNED OR WELDED. INGESTION MAY LEAD TO GASTRIC IRRITATION WITH NAUSEA AND VOMITING.

(CONTINUED)

SECTION V - HEALTH HAZARD DATA

PAGE : 03

----- CHRONIC - (LONG TERM EXPOSURE) -----
 PERSISTANT SKIN CONTACT CAN CAUSE DEFATTING OF SKIN AND POSSIBLE DERMATITIS
 PERSISTANT EYE CONTACT CAN CAUSE REDNESS AND POSSIBLE DAMAGE.
 CHRONIC INHALATION CAN CAUSE HEADACHE AND NAUSEA

 PRIMARY ROUTE OF ENTRY: <-- INHALATION <-- INGESTION X<-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION :
 GENERALLY NOT A HAZARD. MOVE TO FRESH AIR AND TREAT SYMPTOMATICALLY.
 GIVE OXYGEN IF BREATHING IS DIFFICULT AND ARTIFICIAL RESPIRATION IF
 BREATHING HAS STOPPED. GET MEDICAL ATTENTION.

EYE CONTACT :
 FLUSH WITH LARGE AMOUNTS OF WATER FOR 10 MINUTES. LIFTING UPPER AND LOWER
 LIDS OCCASIONALLY. GET MEDICAL ATTENTION IF IRRITATION PERSISTS. TREATMENT
 IS MOST EFFECTIVE WITHIN ONE MINUTE.

SKIN CONTACT :
 WASH WITH SOAP AND WATER. SENSITIVE INDIVIDUALS SHOULD APPLY AN EMOLLIENT
 RICH CREAM AND SHOULD SEE A PHYSICIAN IF IRRITATION PERSISTS.

INGESTION :
 DO NOT INDUCE VOMITING. GIVE ONE OR TWO GLASSES OF WATER AND CALL PHYSICIAN
 ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL
 PNEUMONITIS WHICH CAN BE FATAL.

NOTES TO PHYSICIAN :
 GASTRIC LAVAGE INDICATED. DO NOT INDUCE VOMITING.

SECTION VI - TOXICITY INFORMATION

 PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	OSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
	X<--NO		X<--NO		X<--NO		X<--NO		X<--NO

DIETHYLENETRIAMINE
 ORL-RAT LD50: 1080 MG/KG 2.
 SKN-RBT 10 MG/24 H SEV 2.
 SKN-RBT LD50: 1090 MG/KG 2.
 EPICHLOROHYDRIN OF BIS PHENOL A
 IPR-RAT LD50: 2400MG/KG 2.
 IPR-MUS LD50: 4000MG/KG 2.

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
	N/A		

STEEL TROWEL MIX

(CONTINUED)

SECTION VII - REACTIVITY DATA

PAGE : 04

 INCOMPATIBILITY (MATERIALS TO AVOID)
 STRONG OXIDIZING AGENTS OR STRONG BASES OR MINERAL ACIDS

HAZARDOUS DECOMPOSITION PRODUCTS
 OXIDES OF CARBON, NITROGEN, AMMONIA AND ACRID SMOKE AND FUMES.

HAZARDOUS	X	WILL NOT OCCUR	MAY OCCUR	CONDITIONS TO AVOID
POLYMERIZATION	N/A			

SECTION VIII - SPILL OR LEAK PROCEDURES

 STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
 SCRAPE UP AND PLACE INTO LABELED CONTAINER. SEPARATE THE TWO COMPONENTS
 AS SOON AS POSSIBLE TO PREVENT SET-UP. CLEAN RESIDUE WITH GOOD DETERGENT.

WASTE DISPOSAL METHOD
 ALL LOCAL, STATE AND FEDERAL REGULATIONS CONCERNING HEALTH AND
 POLLUTION FOR DISPOSAL PROCEDURES SHOULD BE FOLLOWED.

NEUTRALIZING AGENT
 N/A

SECTION IX - SPECIAL PROTECTION INFORMATION

 REQUIRED VENTILATION
 LOCAL EXHAUST RECOMMENDED TO CONTROL VAPOR LEVELS IF BURNED OR WELDED.
 GENERAL EXHAUST IS MORE THAN ADEQUATE TO PROTECT WORKER FROM EXPOSURE TO
 LEVELS ABOVE PERMISSIBLE EXPOSURE LIMITS.

RESPIRATORY PROTECTION
 WEAR NIOSH APPROVED RESPIRATOR TO PROVIDE ADEQUATE VENTILATION
 WHEN BURNING, WELDING OR MACHINING (GRINDING).

PROTECTIVE GLOVES
 RUBBER GLOVES SHOULD BE WORN BY SENSITIVE
 INDIVIDUAL DEPENDING ON SEVERITY OF EXPOSURE.

EYE PROTECTION
 SAFETY GOGGLES SHOULD BE WORN DEPENDING ON
 SEVERITY OF EXPOSURE.

OTHER PROTECTION
 CLEAN, PROTECTIVE CLOTHING SHOULD BE WORN.

STORAGE TEMPERATURE	INDOOR	HEATED	REFRIGERATED	OUTDOOR
100 F <--MAX 30 F <--MIN	X		X	

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
 AVOID CONTACT WITH EYES, SKIN AND CLOTHING.

OTHER PRECAUTIONS
 WASH THOROUGHLY AFTER HANDLING. KEEP OUT OF REACH
 OF CHILDREN. AVOID CONTACT WITH EYES, SKIN AND
 CLOTHING.

SECTION XI - REGULATORY INFORMATION

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
N/A		

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF
 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF
 1986 AND 40 CFR PART 372.

IF USE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT
 FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE
 JANITORIAL WORK OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS
 MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND
 LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION - (FOR FUTURE USE)

APPLICABLE REGULATIONS				
<--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)				
SHIPPING NAME				

HAZARD CLASS	ID NUMBER	REPORT QTY

LABELS	LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER	NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

STEEL TROWEL MIX

SECTION XIII - REFERENCES

PAGE : 06

1. THRESHOLD LIMIT VALUES AND BIOLOGICAL EXPOSURE INDICES, 1986-1987.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
 ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY
 IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
 OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH ASSUMES NO RESPONSIBILITY
 FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
 OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
 PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
 UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

MATERIAL SAFETY DATA SHEET : STEEL F1

(040711-0319M -40135925-22100050) DATE OF ISSUE
 11/11/87 11/12/86

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS N/A TRADE NAME & SYNONYMS STEEL FILLED EPOXY STICK (2)
 CHEMICAL FAMILY EPOXY STICK FORMULA X--MIXTURE
 MANUFACTURERS NAME: DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH (1)
 ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
 P.O. BOX 855326
 DALLAS, TEXAS 75265-5326
 PREPARED BY: MARK COHEN/T.S.CHEMIST PRODUCT CODE NUMBER 22100050 EMERGENCY TELEPHONE NUMBER 214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV=	PEL=	CAS#
BASE: DIGLYCIDIAL ETHER OF BIS	IRRITANT	5 MG/M3 2.	N/A	25085-99-8
PHENOL A				
2,4,6 TRI(DIMETHYLAMINO				
METHYL PHENOL) *	IRRITANT	5PPM 3.	NOT EST.	90-72-2

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT) B: >250 F SPEC GRAVITY (H2O=1) : >1

STEEL FILLED EPOXY STICK

(CONTINUED)

SECTION III - PHYSICAL DATA

PAGE : 02

VAPOR PRESSURE (MM HG).	N/A	COLOR	A:LT.GRAY B:DRK GRAY
VAPOR DENSITY (AIR=1)	>1	ODOR	MERCAPTAN LIKE
PH % 100%	N/A	CLARITY	PUTTY
PERCENT VOLATILE BY VOLUME (%)	NIL	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	N/A		
VISCOSITY	N/A		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED) A: >250 FCLOSED CUP	FLAMMABLE LIMITS	LEL	UEL
		N/A	N/A
EXTINGUISHING MEDIA "ALCOHOL"	DRY	WATER	
X--FOAM X--FOAM X--CO2 X--CHEMICAL		--SPRAY	--OTHER

SPECIAL FIRE FIGHTING PROCEDURES
 WEAR NIOSH/MSHA APPROVED RESPIRATOR WHEN FIGHTING FIRES IN CONFINED AREAS
 TO PROTECT FROM ACRID SMOKE, FUMES AND HAZARDOUS DECOMPOSITION PRODUCTS.

UNUSUAL FIRE & EXPLOSION HAZARDS
 NONE KNOWN

NFPA HAZARD RATING (0=INSIGNIFICANT;1=SLIGHT;2=MODERATE;3=HIGH;4=EXTREME):
 2 --HEALTH 1 --FLAMMABILITY 0 --REACTIVITY --SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :

NOT ESTABLISHED FOR MIXTURE SEE SECTION II

EFFECTS OF OVEREXPOSURE

- ACUTE - (SHORT TERM EXPOSURE)
 PROLONGED OR REPEATED EXPOSURE MAY CAUSE SKIN SENSITIZATION. IN SENSITIVE
 INDIVIDUALS CONTACT MAY CAUSE SKIN IRRITATION. THIS PRODUCT IS BOTH
 MECHANICALLY IRRITATING AND CHEMICALLY IRRITATING TO THE EYES.
 INHALATION IS NOT A HAZARD IN NORMAL USE HOWEVER THIS PRODUCT GIVES OFF

(CONTINUED)

SECTION V - HEALTH HAZARD DATA

PAGE : 03

TOXIC FUMES WHEN BURNED OR WELDED. INGESTION MAY LEAD TO GASTRIC IRRITATION WITH NAUSEA AND VOMITING.

NO EFFECTS OTHER THAN THOSE NOTED UPON ACUTE EXPOSURE. - CHRONIC - (LONG TERM EXPOSURE)

PRIMARY ROUTE OF ENTRY: <-- INHALATION <-- INGESTION <-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION:
GENERALLY NOT A HAZARD. MOVE TO FRESH AIR AND TREAT SYMPTOMATICALLY.
GIVE OXYGEN IF BREATHING IS DIFFICULT AND ARTIFICIAL RESPIRATION IF BREATHING HAS STOPPED. GET MEDICAL ATTENTION.

EYE CONTACT:
FLUSH WITH LARGE AMOUNTS OF WATER FOR 10 MINUTES. LIFTING UPPER AND LOWER LID OCCASIONALLY. GET MEDICAL IRRITATION IF IRRITATION PERSISTS. TREATMENT IS MOST EFFECTIVE WITHIN ONE MINUTE.

SKIN CONTACT:
WASH WITH SOAP AND WATER. SENSITIVE INDIVIDUALS SHOULD APPLY AN EMOLLIENT RICH CREAM AND SHOULD SEE A PHYSICIAN IF IRRITATION PERSISTS.

INGESTION:
DO NOT INDUCE VOMITING. GIVE ONE OR TWO GLASSES OF WATER AND CALL PHYSICIAN. ASPIRATION OF MATERIAL INTO THE LUNGS DUE TO VOMITING CAN CAUSE CHEMICAL PNEUMONITIS WHICH CAN BE FATAL.

NOTES TO PHYSICIAN:
GASTRIC LAVAGE IS INDICATED. DO NOT INDUCE VOMITING.

SECTION VI - TOXICITY INFORMATION

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	OSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
	X<--NO		X<--NO		X<--NO		X<--NO		X<--NO

2,4,6 TRI(DIMETHYLAMINO METHYL PHENOL)

ORL-RAT LD50: 2.5 G/KG 1.	SKN-RAT LD50: 1280 MG/ KG 1.
SKN-RBT LD50: 1.2G/KG 1.	SKN-RBT 500MG/24H SEVERE 1.
	EYE-RBT 500MG/24H/SEVERE 1.

DIGLYCDIAL ETHER OF BISPHENOL A

SKN-RBT 500 MG OPEN MILD 1.
EYE-RBT 2 MG/24 H SEVERE 1.
ORL-RAT LD50: 11 G/KG 1.

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
			OPEN FLAMES. LONG-TERM EXPOSURE TO HIGH TEMPERATURES.

(CONTINUED)

SECTION VII - REACTIVITY DATA

PAGE : 04

INCOMPATIBILITY (MATERIALS TO AVOID)
STRONG OXIDIZING AGENTS OR STRONG BASES OR MINERAL ACIDS

HAZARDOUS DECOMPOSITION PRODUCTS
OXIDES OF CARBON, NITROGEN, AMMONIA AND ACID SMOKE AND FUMES.

HAZARDOUS	WILL NOT OCCUR	MAY OCCUR	CONDITIONS TO AVOID
POLYMERIZATION	N/A		

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
DUE TO THE NATURE OF THE PACKAGING OF THIS PRODUCT A SPILL IS UNLIKELY

WASTE DISPOSAL METHOD
PER ALL LOCAL, STATE AND FEDERAL REGULATIONS CONCERNING HEALTH AND POLLUTION FOR DISPOSAL PROCEDURES.

NEUTRALIZING AGENT
N/A

SECTION IX - SPECIAL PROTECTION INFORMATION

REQUIRED VENTILATION
LOCAL EXHAUST RECOMMENDED TO CONTROL VAPOR LEVELS IF BURNED OR WELDED.
GENERAL EXHAUST IS MORE THAN ADEQUATE TO PROTECT WORKER FROM EXPOSURE TO LEVELS ABOVE PERMISSIBLE EXPOSURE LIMITS.

RESPIRATORY PROTECTION
WEAR NIOSH APPROVED RESPIRATOR TO PROVIDE ADEQUATE VENTILATION WHEN BURNING, WELDING OR MACHINING (GRINDING).

PROTECTIVE GLOVES
RUBBER GLOVES SHOULD BE WORN BY SENSITIVE INDIVIDUALS DEPENDING ON SEVERITY OF EXPOSURE.

EYE PROTECTION
SAFETY GOGGLES SHOULD BE WORN DEPENDING ON SEVERITY OF EXPOSURE.

OTHER PROTECTION
CLEAN, PROTECTIVE CLOTHING SHOULD BE WORN.

STORAGE TEMPERATURE	INDOOR	HEATED	REFRIGERATED	OUTDOOR
100 F <--MAX 30 F <--MIN	X		X	

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
 AVOID CONTACT WITH EYES, SKIN AND CLOTHING.

OTHER PRECAUTIONS
 WASH THOROUGHLY AFTER HANDLING. KEEP OUT OF REACH
 OF CHILDREN. AVOID CONTACT WITH EYES, SKIN AND
 CLOTHING.

SECTION XI - TRANSPORTATION - (FOR FUTURE USE)

APPLICABLE REGULATIONS	<--IMCO	<--TARIFF 6 D	<--IATA	<--MILITARY AIR (AFR 71-4)
<--49 CFR				

SHIPPING NAME

HAZARD CLASS | ID NUMBER | REPORT QTY

LABELS | LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER | NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

SECTION XII - REFERENCES

1. DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, 6TH EDITION.
N. IRVING SAX.
2. THRESHOLD LIMIT VALUE FOR CHEMICAL SUBSTANCES IN THE
WORK ENVIRONMENT, 2ND EDITION, ACGIH, 1985.
3. VENDOR'S MSDS.
* INGREDIENT PERCENTAGE IS A TRADE SECRET:
MASS TRADE SECRET NUMBER 99-127-002

STEEL FILLED EPOXY STICK

(CONTINUED)

SECTION XII - REFERENCES

PAGE : 06

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
 ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY
 IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
 OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH ASSUMES NO RESPONSIBILITY
 FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
 OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
 PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
 UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

Fastbond Contact Adhesive
30NF (Neutral)



3M COPPER PRODUCTS COMPANY
MSDS NUMBER - COPD-00-0075

MATERIAL SAFETY 3M
DATA SHEET 3M CENTER
ST. PAUL, MINNESO
55144-1000

612/733-1110 - Operator 55 Duns No: 00-617-2082

DIVISION: ADHESIVES, COATINGS AND SEALERS
TRADE NAME: FASTBOND(R) Contact Adhesive 30NF (Neutral)
3M I.D. NUMBER: 62-4274-5520-9 62-4274-6530-7 62-4274-7530-6
62-4274-8530-5 62-4274-9530-4 62-4274-9531-2

ISSUED: NOVEMBER 1, 1985
SUPERSEDES: MARCH 1, 1984
DOCUMENT: 1029800

=====			
1. INGREDIENTS	C.A.S. NO.	PERCENT	EXPOSURE LIMITS
=====			
polychloroprene elastomer	N/A		N/D 5
synthetic resin	N/A		N/D 5
wetting agents	N/A		N/D 5
protective colloid and antioxidant	N/A		N/D 5
TOTAL OF THE ABOVE	N/A	50.0	N/D 5
toluene	108-88-3	3.0	100 ppm 1
methanol	67-56-1	2.0	200 ppm (ski 1
water	N/A	45.0	N/D 5

SOURCE OF EXPOSURE LIMIT DATA:

1. ACGIH Threshold Limit Values
2. Federal OSHA Permissible Exposure Limit
3. 3M Exposure Guidelines
4. Chemical Manufacturer Recommended Guidelines
5. None Established

ABBREVIATIONS:

N/D - Not Determined
N/A - Not Applicable

=====

2. PHYSICAL DATA

=====

BOILING POINT: 147F (Methanol)
VAPOR PRESSURE: N/A
VAPOR DENSITY (Air=1): 1.1
EVAPORATION RATE (Ether=1): >1
APPEARANCE AND ODOR: Neutral liquid - slight odor of ammonia
SOLUBILITY IN WATER: Good
SP. GRAVITY (Water=1): 1.1
PERCENT VOLATILE: Approx. 50
VISCOSITY: 200-600 CPS
pH: APPROX. 10

=====

3. FIRE AND EXPLOSION HAZARD DATA

=====

FLASH POINT (SETAFLASH): NONE
FLAMMABLE LIMITS - LEL: N/A UEL: N/A

EXTINGUISHING MEDIA:
Water, CO2, foam, dry chemical
SPECIAL FIRE FIGHTING PROCEDURES:
None.
UNUSUAL FIRE AND EXPLOSION HAZARDS:
None.

=====

4. REACTIVITY DATA

=====

STABILITY: STABLE

INCOMPATIBILITY - MATERIALS TO AVOID:
N/A
HAZARDOUS POLYMERIZATION: MAY NOT OCCUR

HAZARDOUS DECOMPOSITION PRODUCTS:
CO, CO2 and smoke particles when subjected to excessive heat or
flame.

=====

5. ENVIRONMENTAL INFORMATION

=====

SPILL RESPONSE:
Observe precautions in all sections. Collect spilled material.
Place in a metal container.

RECOMMENDED DISPOSAL:
Commercial incineration with destruction and removal efficiency
greater than 99.99% is preferred. Otherwise, dispose in a landfill
or municipal refuse incinerator as allowed by local and current U.S.
Environmental Protection Agency regulations.

ENVIRONMENTAL DATA:
N/D

=====

6. SUGGESTED FIRST AID

=====

EYE CONTACT:

Immediately flush eyes with plenty of water for at least 10 minutes and call a physician.

SKIN CONTACT:

Animal studies indicated that product was not irritating to the skin of the test animals.

INHALATION:

Provide fresh air.

IF SWALLOWED:

Do not induce vomiting; immediately call a physician.

=====

7. PRECAUTIONARY INFORMATION

=====

Avoid eye and skin contact. NOTE: Use personal protective equipment, i.e. chemical goggles or safety glasses and gloves. If product is sprayed, use a particulate type face mask.

=====

8. HEALTH HAZARD DATA

=====

EYE CONTACT: Liquid irritating to eyes upon direct contact.
Irritation was limited to the conjunctiva with test animals.

SKIN CONTACT: Animal studies indicated that product was not
irritating to the skin of test animals.

INHALATION: None expected.

INGESTION: Practically non-toxic orally. The LD50 (rat) was >5
grams/kg body weight.

=====

The information on this Data Sheet represents our current data and best
opinion as to the proper use in handling of this product under normal
conditions. Any use of the product which is not in conformance with this Data
Sheet or which involves using the product in combination with any other
product or any other process is the responsibility of the user.

=====

SOHIO CARBORUNDUM



MATERIAL SAFETY DATA SHEET

FIBERFRAX, DURABLANK
8
CERRO CORP. PRODUCTS CORP.
MSDS NUMBER - CCPC-00-0078
APPROVALS:
ENVIRONMENTAL: _____ (PRIORITY)
SAFETY: _____ (PRIORITY)
PURCHASING: _____ (PRIORITY)

Sohio Emergency Phone (Toll-Free)

In Ohio: 800-362-8059

Outside Ohio: 800-321-8642

CHEMTREC Assist: 800-424-9300

Other Product Safety Info.: 216-575-8024

MANUFACTURER: Sohio Engineered Materials Company - Fibers Division
ADDRESS: P.O. Box 808, Niagara Falls, New York 14302

PRODUCT IDENTIFICATION

TRADE NAME: **FIBERFRAX^R DURABLANKET^R 2600**

CAS NUMBER: NA

SYNONYM(S): Ceramic Fiber; Refractory Fiber; MMVF

CHEMICAL FAMILY: Vitreous Aluminosilicate Fibers

MOLECULAR FORMULA: NA

MOLECULAR WEIGHT: NA

SOHIO PRODUCT CODE: NA

HIERARCHY: NA

MSDS NUMBER: CT9

PRODUCT HAZARD SUMMARY

HEALTH

WARNING!

MAY BE HARMFUL IF INHALED

MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT

POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

FIRE

NON-COMBUSTIBLE

REACTIVITY

STABLE

PRODUCT HEALTH HAZARD INFORMATION

ROUTE OF EXPOSURE

EFFECTS OF OVEREXPOSURE

INGESTION:

May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

SKIN:

SLIGHTLY TO MODERATELY IRRITATING. May cause irritation and inflammation due to mechanical reaction to sharp, broken ends of fibers.

EYE:

SLIGHTLY TO MODERATELY IRRITATING. Abrasive action may cause damage to the outer surface of the eye.

INHALATION:

May cause respiratory tract irritation. Pre-existing medical conditions may be aggravated by exposure: specifically, bronchial, hyper-reactivity and chronic bronchial or lung disease.

SPECIAL TOXIC EFFECTS:

Currently, there are no known chronic health effects in humans from long-term exposure to ceramic fibers.

In animal studies, refractory ceramic fibers injected into the peritoneal (abdominal) cavity have caused acute abdominal hemorrhage in hamsters but not in rats. Such injections have also produced tumors in life-time rat studies. In fact, similar results have been observed with numerous other fibrous materials. In such experiments, this abnormally sensitive injection technique is a non-physiological method of exposure, bypassing both normal pulmonary protective and clearance mechanisms.

Recently published inhalation studies have provided contradictory results. One study, which used rats as the experimental animal, reported lung damage consisting of alveolar proteinosis and interstitial fibrosis, whereas, another study using a different strain of rat, showed no similar effects.

Similarly, the pulmonary tumor-causing potential of refractory ceramic fibers in animals when inhaled is unclear. Two studies suggest a low-order potential in inducing pulmonary tumors in animals, while two other studies suggest ceramic fibers are not tumorigenic in animals.

Further animal and human health studies are planned. Pending the results of these studies, strict adherence to recommended safe work practices described elsewhere in this data sheet is advised.

FIRST AID**INGESTION:**

Do not induce vomiting. Get medical attention if irritation persists.

SKIN CONTACT:

Wash area of contact thoroughly with soap and water. Do not rub or scratch exposed skin. Using a skin cream or lotion after washing may be helpful. Get medical attention if irritation persists.

EYE CONTACT:

Flush immediately with large amounts of water. Eye lids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

INHALATION:

Remove affected person from source of exposure. Get medical attention.

PERSONAL PROTECTION INFORMATION

The following personal protective guidelines should be followed, especially where engineering controls (e.g. mechanical dust collection and other means of exhaust ventilation) are not technically feasible or do not reduce airborne fiber concentrations to below 2 fibers/cc.

EYE PROTECTION:

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye baths readily available where eye contact can occur.

SKIN PROTECTION:

Wear gloves, hats and full body clothing to prevent skin contact. Use separate lockers for work clothes to prevent fiber transfer to street clothes. Avoid taking unwashed work clothes home or provide disposable work clothing. Wash work clothes separately from other clothing. Rinse washing machine thoroughly after use. If clothing is to be laundered by someone else, inform launderer of proper procedures.

RESPIRATORY PROTECTION:

Use NIOSH or MSHA approved equipment when airborne exposure limits are exceeded. NIOSH/MSHA approved breathing equipment may be required for non-routine and emergency use. Ventilation may be used to control or reduce airborne concentrations. Acceptable respirators recommended for airborne ceramic fiber concentrations exceeding 2 fibers/cc are:

Concentration
2.0 - 5.0 f/cc
5.0 - 50.0 f/cc

> 50.0 f/cc

Respirator Type
3M 8710 or equivalent.
Survivair full face piece with high efficiency filter 1090-00 or equivalent.
MSA 01-00-06 full face piece type C supplied-air or equivalent. OSHA approved air source required.

Pending the results of long-term health effects studies, engineering control of airborne fibers to the lowest levels attainable is advised.

PHYSICAL PROPERTIES

BOILING POINT, C (F): NA
MELTING POINT, C (F): ND
VAPOR PRESSURE, mm Hg: NA
VAPOR DENSITY (AIR=1): NA
SOLUBILITY IN WATER, %: NA

SPECIFIC GRAVITY: ND
% VOLATILE: ND
EVAPORATION RATE (BUTYL ACETATE=1): NA
VISCOSITY, SUS: NA
POUR POINT: NA
pH: NA

APPEARANCE/ODOR: ND

FIRE AND EXPLOSION DATA

FLASH POINT, C (F): None
AUTOIGNITION TEMPERATURE, C (F): None
FLAMMABILITY LIMITS IN AIR (% BY VOL.): LOWER: NA UPPER: NA

ND = No Data
NA = Not Applicable

BASIC FIREFIGHTING PROCEDURES: Use extinguishing agent suitable for type of surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: NA

REACTIVITY DATA

STABILITY/INCOMPATIBILITY:

Stable under normal conditions of use. Incompatible with hydrofluoric acid and concentrated alkali.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

NA

ENVIRONMENTAL INFORMATION

SPILL OR RELEASE TO THE ENVIRONMENT:

Where possible, use vacuum suction to clean up spilled material. Use dust suppressant where sweeping is necessary. Avoid clean up procedures that may result in water pollution. Personal safety and exposure recommendations described elsewhere in this data sheet apply to exposure during clean up of spilled material.

WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:

Product which has been in service at elevated temperatures (greater than 1600 F) may undergo partial conversion to cristobalite, a form of crystalline silica which can cause severe respiratory disease--"Pneumoconiosis". The amount of cristobalite present will depend on the temperature and length in service.

The permissible exposure limit (PEL) for mineral dusts containing cristobalite is determined by one half the value calculated from the mass formula, $(10 \text{ mg/M}^3)/(\% \text{ SiO}_2 + 2)$, i.e. 18% cristobalite; $1/2(10)/(18+2) = 0.25 \text{ mg/M}^3$ (OSHA 1978). Particular care should be taken when working with "used" material to minimize generation of dust. When removing and handling ceramic fiber used in high temperature applications, special caution should be taken to avoid unnecessary cutting and tearing of the used material to

minimize generation of airborne dust. Use NIOSH or MSHA approved equipment when airborne exposure limits may be exceeded, especially in confined areas with inadequate ventilation or other areas. Acceptable respirators recommended for given airborne cristobalite concentrations are:

<u>Concentration</u>	<u>Respirator Type</u>
Up to 10 times PEL	3M 8710 or equivalent.
10 to 100 times PEL	Survivair full face piece with high efficiency filter 1090-00 or equivalent.
> 100 times PEL	MSA 01-00-06 full face piece type C supplied-air or equivalent. OSHA approved air source required.

TRANSPORTATION REQUIREMENTS

D.O.T. HAZARD CLASS (49 CFR 172.101): NA
D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): NA
D.O.T. LABELS REQUIRED (49 CFR 172.101): NA
D.O.T. PLACARDS REQUIRED: NA
BILL OF LADING DESCRIPTION: NO
UN/NA CODE: NA

INGREDIENT/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REFERENCE
minosilicate (vitreous)	NA	99+	2 fibers/cc TWA (SOHIO)*; 10 fibers/cc CL (SOHIO)*
Zirconium dioxide	1314-23-4	0-1	5 mg/M ³ PEL (OSHA 1978) 5 mg/M ³ TLV; 10 mg/M ³ STEL, as Zr (ACGIH 1984-85)
Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).	Mixture	Trace	NA

*Pending the results of chronic health effects studies, airborne exposures should be controlled at or below the SOHIO recommended exposure limits listed above.

REVISION DATE: 9/20/85
REPLACES SHEET DATED:

COMPLETED BY: G. R. Krautter
APPROVED BY: *Rummet*

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

ND = No Data
NA = Not Applicable

CT9/Page 5

SOHIO CARBORUNDUM



MATERIAL S.

400
Sohio Engineered Materials Company
MSDS NUMBER - CCPS-06-0077
APPROVALS:
ENVIRONMENTAL: _____
SAFETY: _____
PURCHASING: _____

M-60

Sohio Emergency Phone (Toll-Free)

In Ohio: 800-362-8059

Outside Ohio: 800-321-8642

CHEMTREC Assist: 800-424-9300

Other Product Safety Info.: 216-575-8024

MANUFACTURER: Sohio Engineered Materials Company - Fibers Division
ADDRESS: P.O. Box 808, Niagara Falls, New York 14302

PRODUCT IDENTIFICATION

TRADE NAME: **FIBERFRAX^R 440 F & J PAPER**

CAS NUMBER: NA

SYNONYM(S): Ceramic Fiber; Refractory Fiber; MMVF

CHEMICAL FAMILY: Vitreous Aluminosilicate Fibers

MOLECULAR FORMULA: NA

MOLECULAR WEIGHT: NA

SOHIO PRODUCT CODE: NA

HIERARCHY: NA

MSDS NUMBER: BKS

PRODUCT HAZARD SUMMARY

HEALTH

WARNING!

MAY BE HARMFUL IF INHALED

MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT

POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

FIRE

NON-COMBUSTIBLE

REACTIVITY

STABLE

PRODUCT HEALTH HAZARD INFORMATION

ROUTE OF EXPOSURE

EFFECTS OF OVEREXPOSURE

INGESTION:

May cause gastrointestinal disturbances. Symptoms may include irritation, nausea, vomiting and diarrhea.

SKIN:

SLIGHTLY TO MODERATELY IRRITATING. May cause irritation and inflammation due to mechanical reaction to sharp, broken ends of fibers.

EYE:

SLIGHTLY TO MODERATELY IRRITATING. Abrasive action may cause damage to the outer surface of the eye.

INHALATION:

May cause respiratory tract irritation. Pre-existing medical conditions may be aggravated by exposure: specifically, bronchial, hyper-reactivity and chronic bronchial or lung disease.

SPECIAL TOXIC EFFECTS:

Currently, there are no known chronic health effects in humans from long-term exposure to ceramic fibers.

In animal studies, refractory ceramic fibers injected into the peritoneal (abdominal) cavity have caused acute abdominal hemorrhage in hamsters but not in rats. Such injections have also produced tumors in life-time rat studies. In fact, similar results have been observed with numerous other fibrous materials. In such experiments, this abnormally sensitive injection technique is a non-physiological method of exposure, bypassing both normal pulmonary protective and clearance mechanisms.

Recently published inhalation studies have provided contradictory results. One study, which used rats as the experimental animal, reported lung damage consisting of alveolar proteinosis and interstitial fibrosis, whereas, another study using a different strain of rat, showed no similar effects.

Similarly, the pulmonary tumor-causing potential of refractory ceramic fibers in animals when inhaled is unclear. Two studies suggest a low-order potential in inducing pulmonary tumors in animals, while two other studies suggest ceramic fibers are not tumorigenic in animals.

Further animal and human health studies are planned. Pending the results of these studies, strict adherence to recommended safe work practices described elsewhere in this data sheet is advised.

FIRST AID

INGESTION:

Do not induce vomiting. Get medical attention if irritation persists.

SKIN CONTACT:

Wash area of contact thoroughly with soap and water. Do not rub or scratch exposed skin. Using a skin cream or lotion after washing may be helpful. Get medical attention if irritation persists.

EYE CONTACT:

-Flush immediately with large amounts of water. Eye lids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists.

INHALATION:

Remove affected person from source of exposure. Get medical attention.

PERSONAL PROTECTION INFORMATION

The following personal protective guidelines should be followed, especially where engineering controls (e.g. mechanical dust collection and other means of exhaust ventilation) are not technically feasible or do not reduce airborne fiber concentrations to below 2 fibers/cc.

EYE PROTECTION:

Wear safety glasses or chemical goggles to prevent eye contact. Do not wear contact lenses when working with this substance. Have eye baths readily available where eye contact can occur.

SKIN PROTECTION:

Wear gloves, hats and full body clothing to prevent skin contact. Use separate lockers for work clothes to prevent fiber transfer to street clothes. Avoid taking unwashed work clothes home or provide disposable work clothing. Wash work clothes separately from other clothing. Rinse washing machine thoroughly after use. If clothing is to be laundered by someone else, inform launderer of proper procedures.

RESPIRATORY PROTECTION:

Use NIOSH or MSHA approved equipment when airborne exposure limits are exceeded. NIOSH/MSHA approved breathing equipment may be required for non-routine and emergency use. Ventilation may be used to control or reduce airborne concentrations. Acceptable respirators recommended for airborne ceramic fiber concentrations exceeding 2 fibers/cc are:

Concentration

2.0 - 5.0 f/cc

5.0 - 50.0 f/cc

> 50.0 f/cc

Respirator Type

3M 8710 or equivalent.

Survivair full face piece with high efficiency filter 1090-00 or equivalent.

MSA 01-00-06 full face piece type C supplied-air or equivalent. OSHA approved air source required.

Pending the results of long-term health effects studies, engineering control of airborne fibers to the lowest levels attainable is advised.

PHYSICAL PROPERTIES

BOILING POINT, C (F): NA
MELTING POINT, C (F): ND
VAPOR PRESSURE, mm Hg: NA
VAPOR DENSITY (AIR=1): NA
SOLUBILITY IN WATER, %: NA

SPECIFIC GRAVITY: ND
% VOLATILE: ND
EVAPORATION RATE (BUTYL ACETATE=1): NA
VISCOSITY, SUS: NA
POUR POINT: NA
pH: NA

APPEARANCE/ODOR: ND

FIRE AND EXPLOSION DATA

FLASH POINT, C (F): None
AUTOIGNITION TEMPERATURE, C-(F): None

ND = No Data
NA = Not Applicable

FLAMMABILITY LIMITS IN AIR (X BY VOL.): LOWER: NA UPPER: NA
BASIC FIREFIGHTING PROCEDURES: Use extinguishing agent suitable for type of surrounding fire.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NA

REACTIVITY DATA

STABILITY/INCOMPATIBILITY:

Stable under normal conditions of use. Incompatible with hydrofluoric acid and concentrated alkali.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS:

NA

ENVIRONMENTAL INFORMATION

SPILL OR RELEASE TO THE ENVIRONMENT:

Where possible, use vacuum suction to clean up spilled material. Use dust suppressant where sweeping is necessary. Avoid clean up procedures that may result in water pollution. Personal safety and exposure recommendations described elsewhere in this data sheet apply to exposure during clean up of spilled material.

WASTE DISPOSAL:

This substance, when discarded or disposed of, is not specifically listed as a hazardous waste in Federal regulations; however it could be hazardous if it is considered toxic, corrosive, ignitable, or reactive according to Federal definitions (40 CFR 261). Additionally, it could be designated as hazardous according to state regulations. This substance could also become a hazardous waste if it is mixed with or comes in contact with a hazardous waste. If such contact or mixing may have occurred, check 40 CFR 261 to determine whether it is a hazardous waste. If it is a hazardous waste, regulations at 40 CFR 262, 263, and 264 apply.

The transportation, storage, treatment, and disposal of this waste material must be conducted in compliance with all applicable Federal, state, and local regulations.

ADDITIONAL ENVIRONMENTAL REGULATORY INFORMATION:

There may be specific regulations at the local, regional or state level that pertain to this material.

SPECIAL PRECAUTIONS/SUPPLEMENTAL INFORMATION

HANDLING/STORAGE:

Carbon monoxide, carbon dioxide, oxides of nitrogen, reactive hydrocarbons and a small amount of formaldehyde may accompany binder burnoff during first heat. Use adequate ventilation or other precautions to eliminate vapors resulting from binder burnoff. Exposure to burnoff fumes may cause respiratory tract irritation, bronchial hyper-reactivity and asthmatic response..

Product which has been in service at elevated temperatures (greater than 1600 F) may undergo partial conversion to cristobalite, a form of crystalline silica which can cause severe respiratory disease--"Pneumoconiosis". The amount of cristobalite present will depend on the temperature and length in service.

The permissible exposure limit (PEL) for mineral dusts containing cristobalite is determined by one half the value calculated from the mass formula, $(10 \text{ mg/M}^3)/(\% \text{ SiO}_2 + 2)$, i.e. 18% cristobalite; $1/2(10)/(18+2) = 0.25 \text{ mg/M}^3$ (OSHA 1978). Particular care should be taken when working with "used" material to minimize generation of dust. When removing and handling ceramic fiber used in high temperature applications, special caution should be taken to avoid unnecessary cutting and tearing of the used material to minimize generation of airborne dust. Use NIOSH or MSHA approved equipment when airborne exposure limits may be exceeded, especially in confined areas with inadequate ventilation or other areas. Acceptable respirators recommended for given airborne cristobalite concentrations are:

<u>Concentration</u>	<u>Respirator Type</u>
Up to 10 times PEL	3M 8710 or equivalent.
10 to 100 times PEL	Survivair full face piece with high efficiency filter 1090-00 or equivalent.
> 100 times PEL	MSA 01-00-06 full face piece type C supplied-air or equivalent. OSHA approved air source required.

TRANSPORTATION REQUIREMENTS

D.O.T. HAZARD CLASS (49 CFR 172.101): NA
D.O.T. PROPER SHIPPING NAME (49 CFR 172.101): NA
D.O.T. LABELS REQUIRED (49 CFR 172.101): NA
D.O.T. PLACARDS REQUIRED: NA
BILL OF LADING DESCRIPTION: ND
UN/NA CODE: NA

INGREDIENT/HEALTH HAZARD INFORMATION

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REFERENCE
Aluminosilicate (vitreous) containing inorganic binders and fillers	NA	85-95	2 fibers/cc TWA (SOHIO)*; 10 fibers/cc CL (SOHIO)*
Organic binder	NA	5-15	NA

ND = No Data
NA = Not Applicable

COMPONENT	CAS NO.	%	EXPOSURE LIMITS - REFERENCE
Remaining components not determined hazardous and/or hazardous components present at less than 1.0% (0.1% for carcinogens).	Mixture	Trace	NA

*Pending the results of chronic health effects studies, airborne exposures should be controlled at or below the SOHIO recommended exposure limits listed above.

REVISION DATE: 9/20/85
REPLACES SHEET DATED:

COMPLETED BY: G. R. Krautter
APPROVED BY: *RW Mast*

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, no warranty or representation, express or implied, is made as to the accuracy or completeness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

ND = No Data
NA = Not Applicable

BKS/Page 1



UNION CARBIDE CORPORATION

CARBON PRODUCTS DIVI

DERO COPPER PRODUCTS COMPA
MSDS NUMBER - CCPC-00-0090

MATERIAL SAFETY

ENVIRONMENTAL: _____
HAZARD: _____
REMARKS: _____

Page 1 of 3

(Essentially Similar to Form OSHA-20)

SECTION I - PRODUCT IDENTIFICATION

Manufacturer's Name UNION CARBIDE CORPORATION, Carbon Products Div.	Emergency Telephone No. 1-800-822-4357 (Day or Night)
Address (Number, Street, City, State, and ZIP Code) Old Ridgebury Road, Danbury, CT 06817	
Product Graphite Shapes	Trade Name and Synonyms UCAR Graphite Shapes-Standard Grades

SECTION II - HAZARDOUS INGREDIENTS

MATERIAL	CAS #	%	TLV
Synthetic Graphite	7782-42-5	100	10 mg/m ³ (ACGIH)

SECTION III - PHYSICAL DATA

Boiling Point (°F)	N/A	Specific Gravity (H ₂ O=1)	± 2
Vapor Pressure (mm Hg)	N/A	Percent, Volatile by Volume %	N/A
Vapor Density (Air=1)	N/A	Evaporation Rate (=1)	N/A
Solubility in Water	Negligible		
Appearance and Odor	Black shapes, no odor.		

N/A = Not Applicable

Continued on Reverse Side

Notice from Union Carbide Corporation

The data in this Material Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The opinions expressed herein are those of qualified experts within Union Carbide Corporation. We believe that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Union Carbide Corporation, it is the user's obligation to determine the conditions of safe use of the product.

PRODUCT: Graphite Shapes - Standard Grades

Page 2 of 3

SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value:

10 mg/m³ (nuisance dust TLV)

Primary Route of Entry:

Inhalation if dust is present, N/A otherwise.

Effects of Overexposure:

These items are solid shapes whose normal use does not generate any dust. If dust from product is present, prolonged or repeated breathing of dust may cause pneumoconiosis.

Emergency and First Aid Procedures: - N/A

SECTION V - FIRE AND EXPLOSION HAZARD DATA

Flash Point (Method Used)

None

Flammable Limits

% by Volume -

Lel= N/A

Uel= N/A

Extinguishing Media

Will not support combustion.

Special Firefighting Procedures

None

Unusual Fire and Explosion Hazards

None

SECTION VI - REACTIVITY DATA

Stability

Conditions to Avoid - N/A

Unstable | Stable

X

Incompatibility (Materials to Avoid)

N/A

Hazardous Decomposition Products

CO, CO₂

Hazard Polymerization

Conditions to Avoid - N/A

May Occur | Will Not Occur

X

PRODUCT: Graphite Shapes - Standard Grades

Page 3 of 3

SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled

Follow good housekeeping procedures.

Waste Disposal Method

Bury in a landfill where permitted under appropriate federal, state, and local regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify type)

NIOSH-approved respirator for nuisance dust when dust is present.

Ventilation	Local Exhaust	Special - N/A
	Preferred	
	Mechanical (General)	Other
	Yes	N/A

Protective Gloves	N/A	Eye Protection
		Safety glasses

Other Protective Equipment
N/A

SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing

When machining, prevent dust escape into atmosphere. Do not breathe dust.

Other Precautions

Graphite dust is electrically conductive. Dust accumulations can cause short circuits.

3968D
0985-5

Note:

1. Date of Preparation - 9/1/85
2. Carcinogens are not contained in this product.

MAY 12 1983

Greencast

A. P. GREEN REFRACTORIES COMPANY
Green Boulevard, Mexico, Missouri 65265
Tel. 314-473-3626

Product Name: GREENCAST 94

Product Type: High Alumina Castable

Product Chemical Analysis:

SiO ₂	0.05 - 0.15%
Al ₂ O ₃	94.0 - 95.0
Fe ₂ O ₃	0.1 - 0.3
CaO	4.3 - 4.8
MgO	Trace - 0.2
NaKO	0.2 - 0.4

Product Proximate Analysis (Ingredients):

Tabular Alumina	70 to 85%
Refractory Cement	15 to 30

Potential Health Hazard Data:

1. This product's cement may cause drying out and chapping of the skin, and will irritate the eyes if it enters them.

Recommended Disposal Method:

1. Normal housekeeping procedures should be followed in the event of spilled castable.
2. Waste material may be removed to an approved landfill or dump.

Recommended Handling Procedures:

1. Wear standard safety glasses.
2. Avoid breathing of dust while handling dry material.
3. Wear gloves to protect hands from chapping.
4. In case of contact with skin or eyes the contacted area should be washed thoroughly with water.
5. Safety shoes may be worn to protect feet from dropped containers.
6. Avoid breathing of dust during refractory tear-out after service.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health and environmental hazards.

MAY 12 1983

MATERIAL SAFETY DATA SHEET

A. P. GREEN REFRACTORIES COMPANY
Green Boulevard, Mexico, Missouri 65265
Tel. 314-473-3626

~~ALUMINA~~
Greencast
97

Product Name: GREENCAST 97

Product Type: High Alumina Castable

Product Chemical Analysis:

SiO ₂	0.05 - 0.15%
Al ₂ O ₃	97.0 - 97.5
Fe ₂ O ₃	0.1 - 0.2
CaO	2.0 - 2.5
MgO	Trace - 0.1
NaKO	0.1 - 0.3

Product Proximate Analysis (Ingredients):

Tabular Alumina	75 to 90%
Refractory Cement	10 to 25

Potential Health Hazard Data:

1. This product's cement may cause drying out and chapping of the skin, and will irritate the eyes if it enters them.

Recommended Disposal Method:

1. Normal housekeeping procedures should be followed in the event of spilled castable.
2. Waste material may be removed to an approved landfill or dump.

Recommended Handling Procedures:

1. Wear standard safety glasses.
2. Avoid breathing of dust while handling dry material.
3. Wear gloves to protect hands from chapping.
4. In case of contact with skin or eyes the contacted area should be washed thoroughly with water.
5. Safety shoes may be worn to protect feet from dropped containers.
6. Avoid breathing of dust during refractory tear-out after service.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A. P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health and environmental hazards.

HT-784-150 ABCD

COOCC COOCC COOCC COOCC
MCCS NUMBER - COOCC-00-0100

MATERIAL SAFETY DATA SHEET

REGULATIONS: Inland Vacuum Industries
35 Howard Ave
Churchville NY 14428

EMERGENCY TELEPHONE
DAYS: 716-293-3330
EVENINGS: 609-275-5529

RECEIVED BY: Marc C. Jaralee

DATE: 9 May 1988

SECTION ONE: GENERAL INFORMATION

PRODUCT CODE: 052XX

PRODUCT NAME: Inland-19

DESCRIPTION: Solvent refined neutral paraffinic oil

FORMULA: $(CH_2)_n$ 20 $\leq n \leq$ 40

CAS NUMBER: 64742-54-7

SECTION TWO: REGULATED INGREDIENTS

(29 CFR 1910.1200)

REGULATED MATERIALS AT CONCENTRATION
OF 1 % (WT) OR GREATER

NO HAZARDOUS INGREDIENTS. MATERIAL IS
100 % NEUTRAL PARAFFINIC OIL. MATERIAL
HAS BEEN SUBJECT TO SEVERE SOLVENT REFINING.

SECTION THREE: HEALTH HAZARDS

POSSIBLE ENTRY ROUTES: Ingestion, inhalation of oil mists

TARGET ORGANS:

EFFECTS OF OVEREXPOSURE

ACUTE EFFECTS: Exposure to oil mists may cause nausea and eye irritation. Detailed studies have not been made, but material is not expected to be dermatitic or a sensitizer.

CHRONIC EFFECTS: Unknown

FIRST AID PROCEDURES: Skin - wash with soap and water. Eyes - flush with water and contact a physician. Ingestion - give liquids and induce vomiting if victim is conscious. Contact a physician. Small amounts in mouth may be washed out.

REFERENCES:

SECTION FOUR: FIRE AND EXPLOSION DATA

FLASH POINT: > 213 C METHOD USED: Cleveland Open Cup

EXPLOSIVE LIMITS: LOWER: Unknown

UPPER: Unknown

EXTINGUISHING MEDIA: Water fog, chemical foam or carbon dioxide

SPECIAL FIREFIGHTING PROCEDURES: Wear breathing gear when fighting fires in enclosed spaces; incomplete combustion of this material may produce carbon monoxide

UNUSUAL FIRE AND/OR EXPLOSION HAZARDS: None

SECTION FIVE: PHYSICAL PROPERTIES

PHYSICAL STATE: Liquid
VAPOR PRESSURE: < .001 Torr @ 25C BOILING POINT: > 200 C
EVAPORATION RATE (at 25°C): Nil
VAPOR DENSITY: approx 14 WT % VOLATILES: None
SPECIFIC GRAVITY: 0.87 VISCOSITY: 54 cst @ 40 C
SOLUBILITY IN WATER: Nil
APPEARANCE: pale yellow, viscous liquid with faint petroleum odor

SECTION SIX: REACTIVITY

STABILITY: Stable
CONDITIONS TO AVOID: Continuous exposure to temperatures > 200 C
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers
HAZARDOUS DECOMPOSITION PRODUCTS: Incomplete combustion may produce carbon monoxide

SECTION SEVEN: RELEASE PROCEDURES

PROCEDURE TO BE FOLLOWED IN EVENT OF RELEASE: Small spills may be wiped up with a rag. Large spills should be picked up immediately with an absorbent.
PROCEDURES FOR WASTE DISPOSAL: Proper waste disposal procedures are dependent on how product was used. Check applicable Federal, State and Local regulations regarding your process effluent.

SECTION FIVE: PHYSICAL PROPERTIES

STATE: Liquid
VAPOR: < .001 Torr @ 25C BOILING POINT: > 200 C
ON WATER (at bar = 11) Nil
SOL: approx 14 WT % VOLATILES: None
GRAVITY: 0.87 VISCOSITY: 54 cst @ 40 C
SOL IN WATER: Nil
CO: pale yellow, viscous liquid with faint petroleum odor

SECTION SIX: REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: Continuous exposure to temperatures > 200 C

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers

HAZAROUS DECOMPOSITION PRODUCTS: Incomplete combustion may produce carbon monoxide

SECTION SEVEN: RELEASE PROCEDURES

PROCEDURE TO BE FOLLOWED IN EVENT OF RELEASE: Small spills may be wiped up with a rag. Large spills should be picked up immediately with an absorbent.

PROCEDURES FOR PROPER WASTE DISPOSAL: Proper waste disposal procedures are dependent on how product was used. Check applicable Federal, State and Local regulations regarding your process effluent.

SECTION EIGHT: SPECIAL PROTECTION

RESPIRATORY PROTECTION: See notes under ventilation below.
PROTECTIVE GLOVES: Yes - made of oil-impermeable rubber
SAFETY GLASSES/GOGGLES: Yes - glasses should have side shields
OTHER PROTECTIVE EQUIPMENT: None should be required under normal use

VENTILATION US Gov't 8 hr TWA limit for exposure to oil mists is 5 mg per cubic meter.

LOCAL EXHAUST: As required to meet US Gov't exposure limit.
MECHANICAL EXHAUST: As required to meet US Gov't exposure limit.
OTHER REQUIREMENTS:

SECTION NINE: SPECIAL PRECAUTIONS

SPECIAL HANDLING PRECAUTIONS: None

SPECIAL STORAGE PRECAUTIONS: Store in accordance with procedures for handling NFPA Class III B materials.

ADDITIONAL INFORMATION:

MATERIAL SAFETY DATA SHEET

Methylene Chloride

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000009

Page: 1

PRODUCT NAME: METHYLENE CHLORIDE, TECHNICAL

Effective Date: 10/04/85 Date Printed: 10/07/85 Product Code: 55590

1. INGREDIENTS:

Methylene chloride

CAS# 000075-09-2 99.9

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0150

2. PHYSICAL DATA:

BOILING POINT: 104F (39.8C)
VAP PRESS: 340 mmHg @ 20C
VAP DENSITY: 2.93
SOL. IN WATER: 2.0g/100g @ 25C
SP. GRAVITY: 1.320 @ 25/25C
APPEARANCE: Colorless liquid.
ODOR: Not available.

APPROVALS:
ENVIRONMENTAL: (PRIOR)
SAFETY: (PRIOR)
PURCHASING: (PRIOR)

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None
METHOD USED: TOC, TCC, COC

FLAMMABLE LIMITS
LFL: 13% @ 25C
UFL: 23% @ 25C

EXTINGUISHING MEDIA: Water fog.

FIRE & EXPLOSION HAZARDS: Forms flammable vapor-air mixtures at temperatures above ambient. Lower temperatures increase the difficulty of getting it to ignite.

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained respiratory equipment.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID) Hydrolysis producing small amounts of hydrochloric acid possible with gross water contamination.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Aluminum.

(Continued on Page 2)

(R) Indicates a trademark of The Dow Chemical Company

M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000009 Page: 2

PRODUCT NAME: METHYLENE CHLORIDE, TECHNICAL

Effective Date: 10/04/85 Date Printed: 10/07/85 Product Code: 55590

4. REACTIVITY DATA: (Continued)

possibly sodium, potassium, and magnesium.

HAZARDOUS DECOMPOSITION PRODUCTS: Open flames and welding arcs can cause thermal degradation with the evolution of hydrogen chloride and very small amounts of phosgene and chlorine.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Mop up, wipe up or soak up immediately. Remove to out of doors. Large spills: Evacuate area. Contain liquid; transfer to closed metal containers. Keep out of water supply.

DISPOSAL METHOD: When disposing of the unused contents, the preferred options are to send to licensed reclaimer, permitted incinerators, or to evaporate very small quantities in compliance with local, state, and federal regulations including Subtitle C of the Resource Conservation and Recovery Act. Dumping into sewers, on the ground, or with any body of water is strongly discouraged, and may be illegal. Consult The Dow Chemical Company for further information.

6. HEALTH HAZARD DATA:

EYE: May cause moderate eye irritation and slight corneal injury. Vapors may irritate eyes. In animals, irritation and corneal injury healed primarily within 8 days.

SKIN CONTACT: Prolonged or repeated exposure may cause skin irritation, even a burn. Repeated contact may cause drying or flaking of skin.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined.

(Continued on Page 3)

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M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000009

Page: 3

PRODUCT NAME: METHYLENE CHLORIDE, TECHNICAL

Effective Date: 10/04/85 Date Printed: 10/07/85 Product Code: 55390

6. HEALTH HAZARD DATA: (Continued)

INGESTION: Single dose oral toxicity is low. The oral LD50 for rats is in the range of 1500-2500 mg/kg. If aspirated (liquid enters the lung), may be rapidly absorbed through the lungs and result in injury to other body systems.

INHALATION: Minimal anesthetic or narcotic effects may be seen in the range of 500-1000 ppm methylene chloride. Progressively higher levels over 1000 ppm can cause dizziness, drunkenness; concentrations as low as 10,000 ppm can cause unconsciousness and death. These high levels may also cause cardiac arrhythmias (irregular heartbeats).

Excessive exposure may cause irritation to upper respiratory tract and carboxyhemoglobinemia, thereby impairing the blood's ability to transport oxygen.

In confined or poorly ventilated areas, vapors can readily accumulate and can cause unconsciousness and death.

SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause central nervous system, liver or kidney effects. Methylene chloride has been shown to increase the rate of spontaneously occurring malignant tumors in one strain of laboratory mouse and benign tumors in laboratory rats. Other animal studies, as well as several human epidemiology studies, failed to show a tumorigenic response relatable to methylene chloride. Methylene chloride is not believed to pose a measurable carcinogenic risk to man when handled as recommended. Birth defects are unlikely. Exposures having no effect on the mother should have no effect on the fetus. Did not cause birth defects in animals; other effects were seen in the fetus only at doses which caused toxic effects to the mother. In animal studies, has been shown not to interfere with reproduction. Negative or equivocal results have been obtained using mammalian cells or animals. This is consistent with the lack of interaction with DNA in rats and hamsters. Although results of Ames bacterial tests have generally been positive, overall the data suggest that genotoxic potential does not appear to be a significant factor in the toxicity of methylene chloride.

(Continued on Page 4)

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M A T E R I A L S A F E T Y D A T A S H E E T

Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000009

Page: 4

PRODUCT NAME: METHYLENE CHLORIDE, TECHNICAL

Effective Date: 10/04/85 Date Printed: 10/07/85 Product Code: 55590

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower. Remove contaminated clothing and wash before reuse.

INGESTION: Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

INHALATION: Remove to fresh air. If not breathing, give mouth-to-mouth resuscitation. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Exposure may increase "myocardial irritability." Do not administer sympathomimetic drugs unless absolutely necessary. If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): ACGIH TLV is 100 ppm. OSHA PEL is 500 ppm; ACC is 1000 ppm; MAC is 2000 ppm.

VENTILATION: Controlling airborne concentrations below the ACGIH TLV exposure guideline is recommended. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. Lethal concentrations may exist in areas with poor ventilation.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is

(Continued on Page 5)

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M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A. Midland, MI 48674 Emergency Phone: 517-636-4400

MSD: 000009

Page: 5

PRODUCT NAME: METHYLENE CHLORIDE, TECHNICAL

Effective Date: 10/04/85 Date Printed: 10/07/85 Product Code: 55590

8. HANDLING PRECAUTIONS: (Continued)

required for certain operations, use an approved air-purifying respirator. For emergency and other conditions where the exposure guideline may be greatly exceeded, use an approved positive pressure self-contained breathing apparatus. In confined or poorly ventilated areas, use an approved positive pressure self-contained breathing apparatus.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. When prolonged or frequently repeated contact could occur, use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron or full-body suit will depend on operation.

EYE PROTECTION: Use safety glasses. Where contact with liquid is likely, chemical goggles are recommended because eye contact with this material may cause pain, even though it is unlikely to cause injury.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Exercise reasonable care and caution. Avoid breathing vapors. Store in cool place. Concentrated vapors of this product are heavier than air and will collect in low areas such as pits, degreasers, storage tanks, and other confined areas. Do not enter these areas where vapors of this product are suspected unless special breathing apparatus is used and an observer is present for assistance. Do not pressure product out of vessel or transport container with air.

MSDS STATUS: Revised 1, 3, 5, 6, 7, 8, and 9.

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The Information Herein Is Given In Good Faith, But No Warranty,
Expressed Or Implied, Is Made. Consult The Dow Chemical Company
For Further Information.

5. Phosphorus oxides may be formed during burn in.

Recommended Disposal Method:

1. Normal housekeeping procedures should be followed in the event of product spillage.

2. Waste material may be removed to an approved landfill.

3. Under certain service conditions, mainly due to the presence of alkalis or alkaline earth compounds at high temperatures, soluble hexavalent chromium compounds may be formed. At present, hexavalent chrome is considered a potentially hazardous material, requiring special disposal considerations involving an approved hazardous waste disposal site.

Recommended Handling Procedures:

1. Wear standard safety glasses.

2. Wear gloves to protect hands from skin irritation.

3. In case of contact with skin, the contacted area should be washed with soap and water.

4. In case of entering eyes, the eyes should be immediately washed thoroughly with water and examined by a nurse or physician.

5. Safety shoes may be worn to protect feet from dropped containers.

6. An approved respirator should be worn when working with or around this product after its exposure to elevated temperatures for extended periods of time, in the event that hexavalent chrome is present. (See tearout and repair, below.)

7. During tearout or repair we suggest that the areas to be torn out or repaired be lightly sprayed with water, preferably containing a wetting agent (detergent) to suppress dusting. Protective clothing designed to minimize dust retention should be used and vacuum cleaned prior to removal. Dustless methods of cleaning the working area, such as vacuuming, should be used. Light dust may be swept, using dust suppressing compounds.

This material safety data sheet contains confidential proprietary information and is not to be disclosed to the general public or to competition. The information accumulated herein is believed to be accurate but is not warranted to be, whether originating with A.P. Green Refractories or not. This information is offered solely for use in your evaluation of this product in respect to safety, health and environmental hazards.



MATERIAL SAFETY DATA SHEET

1-800-428-7149

DATE PREPARED 1/16/87

NATURE-SOL 100

BURLIN & COMPANY, INC.

P.O. BOX 270-B, INDIANAPOLIS, IN 46206-0270

(317) 923-3211

EAST COAST FACTORY
P.O. Box 898, San Pablo, CA 94806EAST COAST FACTORY
P.O. Box 389, Westwood, NJ 07675SOUTHEASTERN FACTORY
104 N. 13th St., Tampa, FL 33602-4297

24 HOUR EMERGENCY NUMBER (317) 923-3233

TRADE NAME NATURE-SOL 100

SECTION 1 — HAZARDOUS INGREDIENTS

CHEMICAL AND COMMON NAME	CAS #	%	TLV (Unns)
Dipropylene Glycol, methyl ether	34590-94-8	1-5	100 PPM
CERRO COPPER PRODUCTS COMPANY MDS NUMBER - CDFC-00-0173 APPROVALS: ENVIRONMENTAL _____ SAFETY _____ HEALTH _____			

SECTION 2 — PHYSICAL DATA

BOILING POINT	347 °F	FREEZING POINT	NA
SPECIFIC GRAVITY (H ₂ O = 1)	.867	VAPOR PRESSURE (mm Hg.)	Unknown
VAPOR DENSITY (air = 1)	Unknown	SOLUBILITY IN WATER	Emulsifies.
PERCENT VOLATILES BY VOLUME	92	EVAPORATION RATE (— = 1) n Butyl Acetate	41
APPEARANCE, PHYSICAL STATE AND ODOR	Light yellow liquid, citrus odor.		

SECTION 3 — FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	156°F Cleveland Open Cup 120°F Pensky Marten	FLAMMABLE LIMITS	
		LOWER	UPPER
EXTINGUISHING MEDIA	CO ₂ , dry chemical, foam.	Unknown	Unknown
SPECIAL FIRE FIGHTING PROCEDURES	Self contained respiratory equipment should be provided for firemen.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Never use welding or cutting torch on or near drum, even empty.		

SECTION 4 — REACTIVE DATA

STABILITY		CONDITIONS TO AVOID	Heat, sparks, open flames.
UNSTABLE	STABLE		
	X		
INCOMPATIBILITY (materials to avoid)	Strong oxidizers		
HAZARDOUS DECOMPOSITION PRODUCTS	Carbon monoxide, carbon dioxide		

SECTION 5 — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	See Section 1.
POTENTIAL ROUTES OF ENTRY OR EXPOSURE	Ingestion, Inhalation
HEALTH HAZARDS EFFECTS OF OVEREXPOSURE	ACUTE Skin & eye irritation upon direct contact. Nausea upon ingestion. Excessive inhalation may cause drowsiness.
	CHRONIC None Known
EMERGENCY AND FIRST AID PROCEDURES	INHALATION Remove to fresh air.
	INGESTION DO NOT induce vomiting. Dilute by giving water. Give Milk of Magnesia if available. Keep warm, quiet and call a physician.
	EYES Flush with large amounts of water for 15 min. lifting upper & lower lids occasionally. Get medical attention.
	SKIN Wash with mild soap and water. Remove contaminated clothing and launder before reuse.

SECTION 6 — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)	None		
VENTILATION	Mechanical General		
PROTECTIVE GLOVES	Recommended	EYE PROTECTION	Recommended
OTHER PROTECTIVE EQUIPMENT	None		

SECTION 7 — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	Absorb on solid absorbent. Dispose as combustible liquid.
WASTE DISPOSAL METHOD	Dispose according to Federal, State and Local Laws and 40 CFR.

SECTION 8 — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	Store between 40 and 100°F.
OTHER PRECAUTIONS	No special precautions.

MATERIAL SAFETY DATA SHEET



DRESSER

HARBISON-WALKER REFRACTORIES

Dresser Industries, Inc.

One Gateway Center, Pittsburgh, Pennsylvania 15222

TELEPHONE: 412-562-6200

DISCLAIMER

11-22-88

This data sheet is based on OSHA FORM 174 but modified to more adequately represent variation. This information is supplied in good faith by Harbison-Walker and product may change its characteristics. THE DATA PROVIDED HEREIN ARE SOURCES BELIEVED TO BE GENERALLY RELIABLE. HARBISON-WALKER ASSUMES NO DIRECTLY OR INDIRECTLY ARISING FROM THE USE OF THIS PRODUCT OR LIABILITY FOR RELIANCE OF THE INFORMATION CONTAINED HEREIN as a condition of sale. It is solely supplied as an accommodation to the buyer.

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0210

APPROVALS:
ENVIRONMENTAL: _____
SAFETY: _____
MARKETING: _____

SECTION I - PRODUCT IDENTIFICATION

Product Tradename:

RUBY PLASTIC

Type of Refractory:

Phosphate Bonded Alumina Chrome Plastic

SECTION II - HAZARDOUS INGREDIENTS

SEE CHECKED BLOCKS INGREDIENT	GEN. CHEM. FORMULA	C.A.S. NUMBER	PERCENTAGE RANGE	OSHA P.E.L.	ACGIH TLV *	NIOSH CRITERIA DOCUMENT NO.
<input checked="" type="checkbox"/> Quartz	SiO ₂	14808-60-7	0 - 1	10 mg/m ³ % Respirable Quartz *2	0.1 mg/m ³	75-120
<input type="checkbox"/> Cristobalite	SiO ₂	14464-46-1		1/2 Quartz Value	0.05 mg/m ³	75-120
<input type="checkbox"/> Tridymite	SiO ₂	15468-32-3		1/2 Quartz Value	0.05 mg/m ³	75-120
<input type="checkbox"/> Fused Silica	SiO ₂	60676-86-0		20 mppcf	Use Quartz TLV	75-120
<input type="checkbox"/> Coal Tar Products	N/A	65996-93-2		0.2mg/m ³	0.2 mg/m ³	78-107
<input type="checkbox"/> Petroleum Pitch	N/A	8052-42-4		NONE	0.2 mg/m ³	78-106
<input checked="" type="checkbox"/> Phosphoric Acid*	H ₃ PO ₄	7664-38-2	5 - 7	1.0 mg/m ³ (mist)	1.0 mg/m ³	NONE
<input type="checkbox"/> Magnesia	MgO	1309-48-4		10 mg/m ³	10 mg/m ³	NONE
<input checked="" type="checkbox"/> Free Alumina*	Al ₂ O ₃	1344-28-1	74 - 75	10 mg/m ³	10 mg/m ³	NONE
<input type="checkbox"/> Lime	CaO	1305-78-8		5.0 mg/m ³	2.0 mg/m ³	NONE
<input checked="" type="checkbox"/> Chrome III Oxide*	Cr ₂ O ₃	1308-38-9	9 - 10	1.0 mg/m ³	0.5mg/m ³	NONE
<input type="checkbox"/>						
<input type="checkbox"/>						
<input type="checkbox"/>						

* Subject to reporting under Section 313, Sub Title III

SECTION III - PHYSICAL DATA

Appearance and Odor: Green Color, Acid Odor

FORM:

Specific Gravity: 3.04

pH: 2-3

____ Brick

Solubility in Water: Slight Phosphoric Acid

____ Granular

Other:

☒ Paste

SECTION IV - FIRE AND EXPLOSION DATA

UNLESS OTHERWISE NOTED, NONE Product is a refractory, and will not burn.

NOTES:

SECTION V - HEALTH HAZARD DATA*			
*SEE CHECKED BLOCKS		EXPOSURE REQUIRED	
INGREDIENT	EFFECTS OF OVEREXPOSURE	PROLONGED	SHORT TERM
<input checked="" type="checkbox"/> Free Crystalline Silica	Delayed lung fibrosis - silicosis	✓	
<input type="checkbox"/> Coal Tar Products	Skin, lung mucous membrane carcinogen	✓	
	Skin irritation: photosensitization		✓
<input type="checkbox"/> Petroleum Pitch	(Same as Coal Tar Products)		✓
<input type="checkbox"/> Magnesia	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Lime	Irritant to skin, eyes, mucous membranes, etc.		✓
<input checked="" type="checkbox"/> Free Alumina	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/> Fused Silica	Delayed lung fibrosis-silicosis	✓	
<input checked="" type="checkbox"/> Phosphoric Acid	Primary Irritant - skin, eyes, etc.		✓
<input checked="" type="checkbox"/> Chrome III Oxide	Irritant to skin, eyes, mucous membranes, etc.		✓
<input type="checkbox"/>			
<input type="checkbox"/>			

EMERGENCY OR FIRST AID PROCEDURES:

- ☒ Irritants: Wash from skin or flush from eyes using copious amounts of water.
- ☐ Coal Tar Products: Remove from skin by washing with soap and water. DO NOT use solvents. Same for Petroleum Pitch.
- ☐ Other:

SECTION VI - REACTIVITY DATA	
STABILITY: <input checked="" type="checkbox"/> STABLE <input type="checkbox"/> UNSTABLE	COMMENTS: Incompatibility (material to avoid)
Hazardous decomposition products:	Store in cool location prior to use
Hazardous Polymerization: <input type="checkbox"/> may occur <input checked="" type="checkbox"/> will not occur	

SECTION VII - SPILL AND LEAK PROCEDURES
Most refractory products may be landfilled. However, since your application of this product may change its chemical characteristics, and since disposal procedures may vary with locale and are subject to change, you should consult the governmental authority having jurisdiction for disposal information.
COMMENTS: After installation and during service, exposure of this product to high temperature and/or certain chemical elements may cause a change to occur to this product and create Chrome VI Compounds. Therefore, during tearout, care should be taken in the removal and handling of this product. Exposure to Chrome VI Compounds may cause cancer; excessive inhalation will increase the risk of serious respiratory damage; avoid contact with the skin, eyes and mucous membranes since Chrome VI Compounds are also corrosive and may cause skin and nasal septum ulcers.

SECTION VIII - SPECIAL PROTECTION INFORMATION
RESPIRATORY PROTECTION (CHECK ONE): <input checked="" type="checkbox"/> Approved Dust <input type="checkbox"/> Other (Specify):
VENTILATION: Local exhaust ventilation should be provided if routine operation generates dust in excess of allowable limits
PROTECTIVE GLOVES (CHECK TYPE): <input checked="" type="checkbox"/> Acid Resistant <input type="checkbox"/> Impermeable <input type="checkbox"/> Abrasion Resistant <input type="checkbox"/> Other (Specify):
EYE PROTECTION: Approved safety glasses, goggles or faceshields should be used when handling refractory products.
FOOT PROTECTION (CHECK TYPE): <input type="checkbox"/> Metatarsal safety <input type="checkbox"/> Impermeable
PROTECTIVE CLOTHING (SPECIFY):
Limit Direct Skin Exposure

SECTION IX - SPECIAL PRECAUTIONS
<input type="checkbox"/> If block is checked, product contains coal tar pitch, petroleum pitch or creosote. Over-exposure to dust/volatiles may cause cancer and/or irritation to eyes, skin and respiratory tract. Do not breathe dust/fumes; use with proper ventilation. NIOSH approved respirators and protective clothing should be worn while handling this product.
<input type="checkbox"/> If block is checked, this resin bonded product contains free formaldehyde and phenol. Exposure to dust and vapor may cause irritation of skin, eyes, nose, and throat. Allergic skin reaction may also occur. Avoid prolonged or repeated contact with eyes or skin; avoid breathing dust or vapor. Wash thoroughly after handling. Wear rubber gloves and approved NIOSH respirator.
<input checked="" type="checkbox"/> If block is checked, the product contains crystalline silica for which there is limited evidence of a possible association with the incidence of cancer in humans.
Prepared By: C. D. Jamison
Emergency Phone: 412-562-6437

Spotlink 10

MATERIAL SAFETY DATA SHEET "ESSENTIALLY SIMILAR" TO OSHA FORM 20 FORM 4040 (Rev. 8-81)		ADDRESS: Pennwalt Corporation Three Parkway Philadelphia, PA 19102 Emergency Phone Number(s) Business: hours 215/587-7291 Other: hours 713/455-1211 CAS No.(s) See Hazardous Ingredients Chemical Family alkyl mercaptans	
PRODUCT IDENTIFICATION	Pennwalt Product Name SPOTLEAK 1003		Pennwalt Code No. 1003
	Chemical Name and Molecular Formula Blend: Tertiary Butyl Mercaptan (C ₄ H ₉ S) Isopropyl Mercaptan (C ₃ H ₇ S)		CAS No.(s) See Hazardous Ingredients
	Synonyms None		Chemical Family alkyl mercaptans
HAZARDOUS INGREDIENTS	MATERIALS OR COMPONENTS		HAZARD DATA (TLV, LD50, LC50, etc.) See Toxicity Section <div style="text-align: center;"> NFPA Code </div>
	Tertiary Butyl Mercaptan CAS NO. 75-66-1 Isopropyl Mercaptan CAS NO. 75-33-2		76.5 23.5
SHIPPING INFORMATION	Tank Trucks: Mercaptan Mixture, Aliphatic; Flammable Liquid; NA 1228; Flammable Placards; Gas Odorant Drums: Mercaptan Mixture, Aliphatic; Flammable Liquid; NA 1228; Gas Odorant		
PHYSICAL PROP.	Boiling Point/Range: 55-70 °C 131-158 °F Melting Point: N A °C Freezing Point: N A °C Molecular Weight (Calculated): 86.4 Specific Gravity (H ₂ O=1): 0.810 @ 15.5 °C Vapor Pressure psia: 7.3 @ 37.8 °C Vapor Density (Air=1): 3.0 Solubility in H ₂ O: negligible % Volatiles by Volume: 100 Evaporation Rate: N A Ether = 1 Water = 1 Butylacetate = 1 Appearance and Odor: water white liquid with gas-like (mercaptan) odor Other: N A		
FIRE AND EXPLOSION DATA	Flash Point: °C < 0 °F Test Method: TCC Flammable Limits: Lower % Upper % Autoignition Temperature/Fire Point: °C N A °F EXTINGUISHING MEDIA: *Do not direct water into liquid. <input checked="" type="checkbox"/> Water-spray <input checked="" type="checkbox"/> Water-fog <input type="checkbox"/> Water-stream <input checked="" type="checkbox"/> CO ₂ <input checked="" type="checkbox"/> Dry chemical <input type="checkbox"/> Alcohol foam <input checked="" type="checkbox"/> Foam <input type="checkbox"/> Earth or sand SPECIAL FIRE FIGHTING PROCEDURES: <input type="checkbox"/> Do not enter building <input type="checkbox"/> Allow fire to burn <input type="checkbox"/> Water may cause frothing <input type="checkbox"/> Do not use where fire is present.		
	UNUSUAL FIRE AND EXPLOSION HAZARDS: <input type="checkbox"/> Dust explosion hazard <input type="checkbox"/> Sensitive to shock <input type="checkbox"/> Contamination <input type="checkbox"/> Temperature <input checked="" type="checkbox"/> Other (specify): Extremely flammable.		
REACTIVITY DATA	STABILITY: <input checked="" type="checkbox"/> Stable <input type="checkbox"/> Unstable CONDITIONS CONTRIBUTING TO INSTABILITY: <input type="checkbox"/> Thermal decomposition <input type="checkbox"/> Photo degradation <input type="checkbox"/> Polymerization <input type="checkbox"/> Contamination INCOMPATIBILITY - Avoid contact with: <input type="checkbox"/> Strong acids <input type="checkbox"/> Strong alkalis <input checked="" type="checkbox"/> Strong oxidizers <input type="checkbox"/> Other (specify):		
	HAZARDOUS DECOMPOSITION PRODUCTS - THERMAL AND OTHER (list): Hydrogen sulfide (thermal) Sulfur dioxide (combustion)		
WILL OR LEAK	CONDITIONS TO AVOID: <input checked="" type="checkbox"/> Heat <input checked="" type="checkbox"/> Open flames <input checked="" type="checkbox"/> Sparks <input checked="" type="checkbox"/> Ignition sources <input type="checkbox"/> Other (specify):		
	STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: <input type="checkbox"/> Flush with water <input checked="" type="checkbox"/> Absorb with sand or inert material <input checked="" type="checkbox"/> Neutralize * <input type="checkbox"/> Sweep or scoop up and remove <input type="checkbox"/> Keep upwind. Evacuate enclosed spaces. <input checked="" type="checkbox"/> Prevent spread of spill * Treat unabsorbed liquid with household bleach solution. Do not use solid bleach, as violent reaction and even fire can occur.		
WASTE DISPOSAL METHOD - Consult federal, state, or local authorities for proper disposal procedures. Incinerate if permitted by authorities.			

CERRO CORP. PRODUCTS COMPANY
MSDS NUMBER: 1003-00-0027
APPROVED: 11/81
DATE: 11/81

TOXICITY	Oral (acute)		LD ₅₀ : approx. 5000 mg/kg (rats)	
	Dermal (acute)		Non-lethal at 2000 mg/kg (rats)	
	Eye	Moderate conjunctival inflammation (rabbit) reversible	Inhalation (acute)	Non-lethal at 20 mg/l (rats) in 1 hour
	Chronic, Subchronic, etc.			
N E				

Hazard Information	PERMISSIBLE EXPOSURE LIMIT (Specify if TLV/TWA or Ceiling (c))			
	ACGIH 19__ not established		OSHA 19__ not established	
	Other: N E			
	IRRITATION	<input type="checkbox"/> Skin <input checked="" type="checkbox"/> Eye	<input type="checkbox"/> Severe <input type="checkbox"/> Moderate	<input type="checkbox"/> Mild (transient)
	CORROSIVITY	<input type="checkbox"/> Skin <input type="checkbox"/> Eye	<input type="checkbox"/> 4 hrs. (DOT) <input type="checkbox"/> May cause blindness	<input type="checkbox"/> 24 hrs. (CPSC)
	SENSITIZATION N A		INHALATION EFFECTS N A	
	<input type="checkbox"/> Skin	<input type="checkbox"/> Respiratory	<input type="checkbox"/> Allergen	<input type="checkbox"/> Narcotic effect <input type="checkbox"/> Cyanosis <input type="checkbox"/> Asphyxiant
	LUNG EFFECTS (Specify): N A			
	OTHER (Specify): <input type="checkbox"/> Repeated contact-skin defolter <input type="checkbox"/> Other (Specify): Inhaling vapors in high concentration may temporarily desensitize olfactory system and may cause headache and nausea.			
	INGESTION N A <input type="checkbox"/> Induce vomiting <input type="checkbox"/> Do NOT induce vomiting <input type="checkbox"/> Give plenty of water <input type="checkbox"/> Get medical attention <input type="checkbox"/> Other (specify):			
DERMAL <input checked="" type="checkbox"/> Flush with soap and water <input type="checkbox"/> Get medical attention <input type="checkbox"/> Contaminated clothing - remove & launder <input type="checkbox"/> Contaminated shoes - destroy <input type="checkbox"/> Other (specify):				
EYE CONTACT <input checked="" type="checkbox"/> Flush with plenty of water for at least 15 minutes <input checked="" type="checkbox"/> Get medical attention <input type="checkbox"/> Other (specify):				
INHALATION <input checked="" type="checkbox"/> Remove to fresh air <input type="checkbox"/> If not breathing, give artificial respiration <input type="checkbox"/> Give oxygen <input type="checkbox"/> Get medical attention <input type="checkbox"/> Other (specify):				

Special Protection Information	VENTILATION REQUIREMENTS - Always maintain exposure below permissible exposure limits			
	<input type="checkbox"/> Consult an industrial hygienist or environmental health specialist	<input type="checkbox"/> Local exhaust	<input checked="" type="checkbox"/> Use with adequate ventilation	<input type="checkbox"/> Check for air contaminant and oxygen deficiency
	Other (specify):			
	EYE <input type="checkbox"/> Safety glasses <input type="checkbox"/> Face shield <input checked="" type="checkbox"/> Goggles	HAND (GLOVE TYPE) <input type="checkbox"/> Polyvinyl chloride <input type="checkbox"/> Neoprene <input type="checkbox"/> Butyl rubber <input type="checkbox"/> Polyvinyl alcohol <input checked="" type="checkbox"/> Other (specify): Any of these.		
	RESPIRATOR TYPE - Use only NIOSH approved equipment <input checked="" type="checkbox"/> Self-contained <input checked="" type="checkbox"/> Supplied air <input type="checkbox"/> Can or cartridge gas or vapor <input type="checkbox"/> Filter - dust, fume, mist <input type="checkbox"/> Other (specify):			
OTHER PROTECTIVE EQUIPMENT N A <input type="checkbox"/> Rubber boots <input type="checkbox"/> Apron <input type="checkbox"/> Other (specify):				

Special Precautions	PRECAUTIONARY LABELING			
	<input checked="" type="checkbox"/> Wash thoroughly after handling	<input checked="" type="checkbox"/> Do not get in eyes, on skin or clothing	<input checked="" type="checkbox"/> Do not breathe vapor	<input checked="" type="checkbox"/> Keep container closed
<input type="checkbox"/> Do not store near combustibles		<input type="checkbox"/> Keep from contact with clothing and other combustible materials	<input checked="" type="checkbox"/> Empty container may contain hazardous residues	<input checked="" type="checkbox"/> Use explosion proof equipment
Other handling and storage conditions N A				

Prepared by	Date	Address	Phone
Jeno M. Toth	4/25/84	3 Parkway, Philadelphia, PA 19102	215/587-7291

PLEASE NOTE ➤ The above information is accurate to the best of our knowledge. However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, Pennwalt MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, WITH RESPECT TO THE COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. User should satisfy himself that he has all current data relevant to his particular application.

(040711-0319M -40135925-88010180)

DATE OF ISSUE

11/11/87

SUPERSEDES

12/18/86

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS

N/A

TRADE NAME & SYNONYMS

LIONS TONGUE OPEN MESH

CHEMICAL FAMILY

SILICON CARBIDE AND RESIN BINDER

FORMULA

<--MIXTURE

MANUFACTURERS NAME

DYNA SYSTEMS & PARTSMASTER CO DIV OF NCH

ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)

P O BOX 655326

DALLAS, TEXAS 75265-5326

PREPARED BY:

J. MICHAEL COLE

PRODUCT CODE NUMBER

88010180

EMERGENCY TELEPHONE NUMBER

214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)

HAZARD

TLV*

PEL*

CAS#

SILICON CARBIDE

10MG/M3

15MG/M3

409-21-2

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)

N/A

SPEC GRAVITY (H2O=1)

N/A

VAPOR PRESSURE (MM HG)

N/A

COLOR

CLOTH COATED

VAPOR DENSITY (AIR=1)

N/A

ODOR

N/A

PH @ 100%

N/A

CLARITY

N/A

LIONS TONGUE OPEN MESH

(CONTINUED)

SECTION III - PHYSICAL DATA

PAGE : 02

PERCENT VOLATILE
BY VOLUME (%)

N/A

EVAPORATION RATE
(BU AC = 1)

N/A

SOLUBILITY IN WATER

N/A

VISCOSITY

N/A

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)

N/A

N/A

FLAMMABLE LIMITS

N/A

LEL

N/A

UEL

N/A

EXTINGUISHING MEDIA "ALCOHOL"

<--FOAM

<--FOAM

<--CO2

DRY

<--CHEMICAL

WATER

<--SPRAY

<--OTHER

SPECIAL FIRE FIGHTING PROCEDURES
BACKINGS AND RESIN BINDER WILL BURN OR DECOMPOSE. USE RESPIRATORY PROTECTION.

UNUSUAL FIRE & EXPLOSION HAZARDS

N/A

NIPIA HAZARD RATING (0=INSIGNIFICANT;1=SLIGHT;2=MODERATE;3=HIGH;4=EXTREME):
<--HEALTH <--FLAMMABILITY <--REACTIVITY <--SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :

N/A

EFFECTS OF OVEREXPOSURE

- ACUTE - (SHORT TERM EXPOSURE)

MAY CAUSE COUGHING, SHORTNESS OF BREATH.

- CHRONIC - (LONG TERM EXPOSURE)

MAY AFFECT BREATHING CAPACITY.

PRIMARY ROUTE OF ENTRY: <-- INHALATION <-- INGESTION <-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION :
MAY CAUSE COUGHING, SHORTNESS OF BREATH. MAY AFFECT BREATHING CAPACITY. REMOVE TO FRESH AIR APPLY ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN FIRST AID OR MEDICAL ASSISTANCE.

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0234

APPROVALS:

(PRIOR)

SAFETY

Hazard

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(CONTINUED)

SECTION V - HEALTH HAZARD DATA

PAGE : 03

EYE CONTACT:
DUST MAY IRRITATE EYES. WASH WITH LARGE AMOUNTS OF WATER. OBTAIN FIRST AID OR MEDICAL ASSISTANCE, IF NEEDED.

SKIN CONTACT:
NOT ABSORBED THROUGH SKIN; MAY CAUSE ABRASIONS. OBTAIN FIRST AID OR MEDICAL ASSISTANCE, IF NEEDED.

INGESTION:
NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.

NOTES TO PHYSICIAN:
REMOVE TO FRESH AIR AND SUPPLY ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN FIRST AID OR MEDICAL ASSISTANCE.

SECTION VI - TOXICITY INFORMATION

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	OSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
	X<--NO		X<--NO		X<--NO		X<--NO		X<--NO

N/A

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
	N/A		

INCOMPATIBILITY (MATERIALS TO AVOID)
N/A

HAZARDOUS DECOMPOSITION PRODUCTS
IN USE DUST AND DECOMPOSING RESIN SYSTEM FUMES ARE GENERATED.

HAZARDOUS	WILL NOT	MAY	CONDITIONS TO AVOID
	X <--OCCUR	<--OCCUR	

POLYMERIZATION

SECTION VIII - SPILL OR LEAK PROCEDURES

(CONTINUED)

SECTION VIII - SPILL OR LEAK PROCEDURES

PAGE : 04

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
NORMAL CLEAN UP PROCEDURES.

WASTE DISPOSAL METHOD
STANDARD LANDFILL METHODS CONSISTANT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS.

NEUTRALIZING AGENT
N/A

SECTION IX - SPECIAL PROTECTION INFORMATION

REQUIRED VENTILATION
RECOMMENDED.

RESPIRATORY PROTECTION
AS NEEDED. APPROVED DUST RESPIRATOR OSHA 24CFR1910-134

PROTECTIVE GLOVES
AS DESIRED BY USER

EYE PROTECTION
RECOMMENDED

OTHER PROTECTION
AS NEEDED. POSSIBLY HEARING EQUIPMENT.

SECTION X - STORAGE AND HANDLING INFORMATION

STORAGE TEMPERATURE	INDOOR	HEATED	REFRIGERATED	OUTDOOR
000000<--MAX 000000<--MIN				

PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
HANDLE WITH ADEQUATE VENTILATION. A FORMALDEHYDE OR PHENOLIC RESIN ODOR FROM THE BINDING SYSTEM MAY ON OCCASION BE RELEASED DURING STORAGE.

OTHER PRECAUTIONS
N/A

SECTION XI - TRANSPORTATION * (FOR FUTURE USE)

(CONTINUED)

SECTION XI - TRANSPORTATION - (FOR FUTURE USE)

PAGE : 05

APPLICABLE REGULATIONS
<--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

SHIPPING NAME

HAZARD CLASS | ID NUMBER | REPORT QTY

LABELS | LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER | NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

SECTION XII - REFERENCES

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY
IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

DYNA SYSTEMS A PARTSMaster CO DIV OF NCH ASSUMES NO RESPONSIBILITY
FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

Super Filtral Grade 1

CODE: J96400

PRODUCT NAME

Super Filtrol Grade 1

MATERIAL SAFETY DATA SHEET

H-33-84-WP

DATE: 02/02/87

SECTION I -- IDENTIFICATION

SUPPLIER'S NAME Harshaw/Filtrol Partnership

EMERGENCY TELEPHONE 216/292-9200

ADDRESS 30100 Chagrin Blvd.
Cleveland, Ohio 44124

CHEMICAL NAME Bentonite acid-leached powder

CAS No. 70131-50-9

U.N. No. Not applicable

FORMULA Proprietary

D.O.T. CLASSIFICATION Not regulated

SECTION II -- HAZARDOUS INGREDIENTS OF MIXTURES

<u>Material or Component</u>	<u>%</u>	<u>THRESHOLD LIMIT VALUE</u>	
		<u>ACGIH, 1986-87</u>	<u>OSHA PEL</u>
Aluminum silicate	≅97	5 mg/m ³ , resp.	5 mg/m ³
Crystalline silica (quartz)	≅3	0.1 mg/m ³ , resp.	2.0 mg/m ³ , resp.**

**Calculated according to OSHA, Table Z-3.

Unless otherwise noted, all values are reported as 8-hr Time-Weighted Averages (TWA's) and total dust (particulates only).

SECTION III -- PHYSICAL DATA

BOILING POINT Not applicable

MELTING POINT Not applicable

SPECIFIC GRAVITY (H₂O=1) 2.0

VAPOR PRESSURE Not applicable

VAPOR DENSITY (Air=1) Not applicable

SOLUBILITY IN H₂O (% by Wt.) Negligible

% VOLATILES BY VOLUME Not applicable

EVAPORATION RATE (Butyl Acetate=1)
Not applicable

APPEARANCE AND ODOR Light greyish to off-white powder; odorless

SECTION IV -- FIRE AND EXPLOSION DATA

Not a fire or explosion hazard.

SECTION V -- HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV)/ PERMISSIBLE EXPOSURE LIMIT (PEL)

See Section II above.

EFFECTS OF OVEREXPOSURE

Eye contact may cause mechanical irritation.

Skin contact: No adverse effects expected.

Inhalation may cause irritation to respiratory tract and lung damage if exposure is repeated or prolonged.

Ingestion: No adverse effects expected.

EMERGENCY AND FIRST AID PROCEDURES

Eye contact: Flush eyes with plenty of water; if irritation develops, call a physician.

Inhalation: Remove to fresh air.

== DATE: 02/02/87 == SECTION VI -- REACTIVITY DATA == CODE: J96400 ==

CONDITIONS CONTRIBUTING TO INSTABILITY None expected

INCOMPATIBILITY None expected

HAZARDOUS DECOMPOSITION PRODUCTS None expected

== SECTION VII -- SPILL OR LEAK PROCEDURES ==

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Contain spillage and scoop up or vacuum. Avoid dusting.

WASTE DISPOSAL METHOD Federal, state and local disposal laws and regulations will determine the proper waste disposal procedure.

== SECTION VIII -- PROTECTIVE EQUIPMENT ==

VENTILATION General; local exhaust ventilation as necessary to control dust.

PERSONAL PROTECTIVE EQUIPMENT A NIOSH/MSHA approved respirator as necessary
Safety Glasses (with side shields)

== SECTION IX -- SPECIAL PRECAUTIONS ==

Avoid breathing dust.
Avoid contact with eyes.
Use with adequate ventilation.
Product becomes slippery when wet.

== SECTION X -- PERSONNEL SAMPLING PROCEDURE ==

For crystalline silica: Refer to NIOSH Manual of Analytical Methods, 3rd Edition, Volume 2, Methods 7500, 7601, 7602.

Information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgement.

DATE: 02/02/87

CODE: J96400

PRODUCT: Super Filtrol Grade 1



~~CONFIDENTIAL~~
SMITH & KLEBES, INC.
411 JOHN DOWNEY DRIVE
NEW BRITAIN, CONN. 06051

~~BAV 200~~
Ultrasonic Clean.
S.C. Johnson & Son, Inc. Flu.
Racine, Wisconsin 53403-5011
Phone: (414) 631-2777

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0250

MATERIAL SAFETY

SECTION I — PRODUCT

Product Name: CCME CLEAN			
Chemical or Common Name: NA	Date Issued: 07/24/85	Supersedes: 04/12/85	Prepared by: Gordon B. Bradshaw Materials Data Coordinator

SECTION II — INGREDIENT INFORMATION

	Weight %	Exposure Limit
Alkali Metasilicates and Carbonates	5-10	
Sodium Hydroxide (CAS #1310-73-2)	1-3	2 mg/m ³
Trisodium MTA (CAS #5064-31-3) (NTP Listed - See Section X)	1-3	
Surfactants	4-6	
Formaldehyde (CAS# 50-00-0)	under 0.1	2 ppm (ceiling)
Colorant	under 0.1	
Water	balance	

SECTION III — PHYSICAL DATA

Appearance/Odor: Yellow-green liquid with mild odor	Specific Gravity (H ₂ O = 1): 1.2
Vapor Pressure (mm Hg): NA	Percent Volatile By Volume (%): NA
Solubility in Water: Complete	Vapor Density (Air = 1): NA
Freezing Point (°F): ND	Boiling Point (°F): above 200
pH: 13 (Undiluted)	Evaporation Rate (Butyl Acetate = 1): NA

SECTION IV — FIRE AND EXPLOSION INFORMATION

Flash Point (°F) (Method Used): NA	Flammable Limits: NA
Extinguishing Media: <input checked="" type="checkbox"/> Foam <input checked="" type="checkbox"/> CO ₂ <input checked="" type="checkbox"/> Dry Chemical <input checked="" type="checkbox"/> Water Fog <input type="checkbox"/> Other	
Special Fire Fighting Procedures: Normal fire fighting procedures may be used. Cool and use caution when approaching or handling fire-exposed containers.	
Unusual Fire and Explosion Hazards: Corrosive Material (See Sections VI, VIII). Container may burst in heat of fire.	

SECTION VIII — SPECIAL PROTECTION INFORMATION

Respiratory Protection (Specify type): No special requirements under normal use conditions. If mists/vapors are not adequately controlled by local ventilation, use appropriate respiratory protection to prevent overexposures.

Ventilation: General room ventilation is normally adequate. Substantial amounts of mists/vapors can be controlled with local exhaust ventilation or respiratory protection.

Protective Gloves: If prolonged or repeated contact is possible: Rubber, PVC or other impervious material.

Eye Protection: Chemical workers splash-proof goggles where eye contact may be a problem.

Other Protective Measures: Use good personal hygiene practices. Where gross eye/skin contact may be a problem, wear/use appropriate protective equipment.

SECTION IX — SPECIAL PRECAUTIONS

Precautionary Labeling CAUTION: Eye irritant. Avoid contact with eyes. If eye contact occurs, flush with water. If irritation persists, contact physician. Avoid inhalation of product in spray application. Keep out of reach of children. Keep from freezing. Store at temperatures between 40 F and 100 F. Keep container closed when not in use.

Other Handling and Storage Conditions

Wash thoroughly after handling. Keep from freezing. Keep out of reach of children.

SECTION X — ADDITIONAL INFORMATION

For information on appropriate emergency procedures phone: (414) 631-2000.

Based upon ingestion of ITA in lifetime feeding studies, ITA has been shown to induce tumors in the urinary tracts of rats and mice. However, on a practical basis and according to guidelines for classification of experimental animal carcinogens of the American Conference of Government Industrial Hygienists (ACGIH), ITA would not be considered an occupational carcinogen of any practical significance.

NA-Not Applicable, NSR-No Special Requirement, ND-Not Determined for this product

The information herein is given in good faith. No warranty, expressed or implied, is made. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State, and local laws and regulations.



MATERIAL SAFETY

PG 3A / 32B

CHEMICAL NAME & SYNONYMS Chlorinated trisodium phosphate		
CHEMICAL FAMILY Phosphate	FORMULA $\text{Na}_3\text{PO}_4/\text{NaOCl}$	TRADE NAME TSP-C1
DESCRIPTION Fine white crystalline solid with faint chlorine odor		CAS NO. 56802-99-4

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE	
Avoid contact with eyes, skin or clothing. Do not take internally. Upon contact with skin or eyes, wash off with water. Avoid breathing dust. Store in a cool place. Keep containers closed when not in use. *Wear NIOSH/MSHA approved dust respirator if excessive dusting occurs.	
PROTECTIVE EQUIPMENT	VENTILATION REQUIREMENTS
EYES Goggles	Local mechanical exhaust ventilation recommended to minimize employee exposure.
GLOVES Rubber, neoprene	
OTHER See " above	

BASIC MATERIAL	OSHA PEL	LD50	LC50	SIGNIFICANT EFFECTS
Chlorinated trisodium phosphate	None Established	4.8 g/kg (rat)	>2.2 mg/l 1 hr(rat)	Burns to eyes, irritant to skin and mucous membranes

FLASH POINT Not Applicable METHOD	OSHA CLASSIFICATION Not Regulated (Non-ignitable)	FLAMMABLE EXPLOSIVE LIMIT	LOWER N.D.	UPPER N.D.
EXTINGUISHING MEDIA Non-combustible - Choose extinguishing media suitable for surrounding materials.				
SPECIAL FIRE HAZARD & FIRE FIGHTING PROCEDURES Use NIOSH/MSHA approved self-contained breathing apparatus where this material is involved in a fire.				

THRESHOLD LIMIT VALUE	
None established	
SYMPTOMS OF OVER EXPOSURE Nausea, vomiting, diarrhea, eye, skin, mucous membrane and gastrointestinal irritation.	
EMERGENCY FIRST-AID PROCEDURES	
SKIN	Flush with water for 15 minutes. Call a physician.
EYES	Flush with water for 15 minutes. Call a physician.
	Wash out mouth with water. Give plenty of water to drink. Do not induce vomiting.
INGESTION	Call a physician.
INHALATION	Remove victim to fresh air. Call a physician.

PRODUCT CODE 897079CHEMICAL NAME TSP-C1

SECTION VI - TOXICOLOGY (PRODUCT)

ACUTE ORAL LD 50 4.8 g/kg (rats)	CARCINOGENICITY Not known to be carcinogenic
ACUTE DERMAL LD 50 > 3 g/kg (rabbits)	MUTAGENICITY Not known to be mutagenic
ACUTE INHALATION LC 50 > 2.16 mg/l inspired air for 1 hour (rats)	EYE IRRITATION Corrosive
	PRIMARY SKIN IRRITATION Irritant
PRINCIPAL ROUTES OF ABSORPTION Inhalation	
EFFECTS OF ACUTE EXPOSURE Nausea, diarrhea, vomiting, eye, skin, mucous membrane and gastrointestinal irritation.	
EFFECTS OF CHRONIC EXPOSURE None expected at industrial use levels.	

SECTION VII - SPILL AND LEAKAGE PROCEDURES (CONTROL PROCEDURES)

ACTION FOR MATERIAL RELEASE OR SPILL Wear NIOSH/MSHA approved self-contained breathing apparatus. Follow OSHA regulations for respirator use. (See 29 CFR 1910.134) Wear goggles, coveralls and neoprene or rubber gloves and boots. Shovel or sweep up and place in an approved DOT container and seal. Wash all contaminated clothing before reuse. In the event of a massive spill, use the emergency telephone number shown on the front of this sheet.	
TRANSPORTATION EMERGENCY, CONTACT CHEMTREC 800-424-9300	
WASTE DISPOSAL METHOD Dispose of contaminated product, empty containers and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate Federal, State and local regulatory agencies to ascertain proper disposal procedures.	

SECTION VIII - SHIPPING DATA

D.O.T.	Sodium Phosphate, Tribasic ORM-E NA 9148 (Applicable for bulk shipments only)
--------	---

SECTION IX - REACTIVITY DATA

STABLE <input checked="" type="checkbox"/> UNSTABLE <input type="checkbox"/> AT <input type="checkbox"/> C <input type="checkbox"/> F <input type="checkbox"/>	HAZARDOUS POLYMERIZATION	MAY OCCUR WILL NOT OCCUR <input checked="" type="checkbox"/>
CONDITIONS TO AVOID None known		
INCOMPATIBILITY (MATERIAL TO AVOID) None known		
HAZARDOUS DECOMPOSITION PRODUCTS Chlorine, phosphorus oxides		

SECTION X - PHYSICAL DATA

MELTING POINT 144° F	VAPOR PRESSURE No Data	VOLATILES No Data
BOILING POINT Not applicable	SOLUBILITY IN WATER 18% @ 75° F	EVAPORATION RATE No Data
SPECIFIC GRAVITY (H ₂ O=1) 1.6	PH 1% sol 11.9	VAPOR DENSITY (AIR=1) No Data

INFORMATION: FURNISHED TO

FURNISHED BY DATE JUNE 19, 1986

ATTN: DEPT HANDLING MATL SAFETY DATA SHEETS
CERRO COPPER PRODUCTS
PO BOX 681
EAST ST LOUIS ILL 62202
ATT. F BAKER OTTOFY

Department of Environmental Hygiene and Toxicology
(203) 789-5436



Olin CORPORATION
120 Long Ridge Road, Stamford, Connecticut 06904
OCEAN® Network
EMERGENCY PHONE 1-800-OLIN-911



G. S. ROBINS & CO.
CHEMICALS WITH SERVICE
126 Chouteau St. Louis, Mo. 63102
(314) 621-5155

10-1-87 ULTRA SONIC CLEANER #2

MATERIAL SAFETY DATA SHEET

Product Name

ULTRA SONIC CLEANER #2

PRODUCT IDENTIFICATION

Synonyms: None

DOT Proper Shipping Name: N/A

DOT Hazard Class/ I.D. No.: N/A

Label Requirements: N/A

U.S. Surface Freight Classification: N/A

HAZARDOUS INGREDIENTS

COMPONENT	%	HAZARD DATA
Water	Balance	
Disodium Salt	2-3%	
Surfactant	3-4%	
Sodium Hydroxide	Under 1%	
Trisodium NTA	Under 3.5%	2M ³

WARNING STATEMENTS

Wash thoroughly after handling. Keep from freezing. Keep out of reach of children.

PRECAUTIONARY MEASURES

Use good personal hygiene practices. Where gross eye/skin contact may be a problem, wear or use appropriate protective equipment. Do not let material remain in contact with skin.

EMERGENCY AND FIRST AID PROCEDURES

If in eyes, immediately flush with plenty of water. Call a physician if irritation persists.
If on skin, immediately flush with plenty of water. Wash clothing before re-use.
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

OCCUPATIONAL CONTROL PROCEDURES

Eye Protection: Caution- Eye Irritant. Avoid contact. Chemical workers use splash-proof goggles where eye contact may be a problem.

Skin Protection: If prolonged or repeated contact is possible:
Rubber, PVC or other impervious material.

Respiratory Protection: No special requirements under normal use conditions. If mists/ vapors are not adequately controlled by local ventilation, use appropriate respiratory protection.

Ventilation: General room ventilation is normally adequate.
Substantial amounts of mists/ vapors can be controlled with local exhaust ventilation or respiratory protection.

Airborne Exposure Limits: N/A

FIRE PROTECTION INFORMATION

Flash Point: N/A

Auto Ignition Temperature: N/A

Flammable Limits in Air, % by Vol. @ 212°F: N/A

Extinguishing Media: Foam, CO₂, Dry Chemical, Water Fog.

Unusual Fire And Explosion Hazards: Corrosive material. Container may burst in heat.

Special Firefighting Procedures Use standard approved fire fighting procedures. Keep product cool .
Use caution when approaching or handling fire exposed containers.

REACTIVITY DATA

Materials to Avoid: None

Hazardous Decomposition
Products: N/A

PHYSIOLOGICAL EFFECTS SUMMARY

PHYSICAL DATA

Appearance: Clear-white liquid, mild odor.

Specific Gravity @ 20°C/4°C: 1.080 at 77° F.

Boiling Point @ 760 mm Hg: Above 20°C

Vapor Pressure @ N/A

Vapor Density (Air = 1): N/A

Percent Volatile by Volume: N/A

SPILL, LEAK & DISPOSAL INFORMATION

Waste Disposal: Dispose of in accordance with all local state and federal regulations. Disposal by incineration in an approved incinerator is recommended.

Spill or Leakage Contain spilled material and absorb with clay, saw dust or other absorbent material. Place all spilled material, contaminated sorbent materials, contaminated dirt, and other contaminated material in drums.
Procedures: Keep material out of watersheds and water systems.

OTHER REGULATORY REQUIREMENTS Based upon ingestion of NTA in lifetime feeding studies. NTA has been shown to induce tumors in the urinary tracts of rats and mice. Nitritotriacetic acid, in a National Toxicology Program listed carcinogen and is identified as a hazardous chemical, under criteria of OSHA Hazard Communication Standard (29CFR 1910.1200).

WRITTEN BY: Lee Tempel
REVISION DATE: 9-30087

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Material Safety Data Sheet

Required under OSHA Safety and Health Regulations
for Hazardous Employment (29 CFR 1910.120)

DEPT. OF LABOR - OCCUPATIONAL SAFETY AND HEALTH
OSHA NUMBER - OSHA-30-01250
ENVIRONMENTAL
HEALTH
SAFETY

105 01

OMB No. 1218-0074
Expiration Date 05/31/85

ISSUE 11/85 CQ: a LC: B

CAS NO. 1302-78-9

Section I

Manufacturer's Name

American Colloid Company

Emergency Telephone Number
312-966-5720

Address (Number, Street, City, State, and ZIP Code)
5100 Suffield Court

Chemical Name
and Synonyms

Bentonite "Colloidal Clay"

Skokie, Illinois 60077

Trade Name
and Synonyms

Volclay GPG 30

Hydrous Aluminum Silicates

Chemical Family (Al, Fe 1.67 Mg 0.33) Si₄O₁₀(OH)₂ Na⁺Ca⁺⁺/2.33

Section II - Hazardous Ingredients

Paints, Preservatives, and Solvents

% TLV (Units) Alloys and Metallic Coatings

% TLV (Units)

Pigments

0 N/A

Base Metal

0 N/A

Catalyst

0 N/A

Alloys

0 N/A

Venice

0 N/A

Metallic Coatings

0 N/A

Solvents

0 N/A

Filler Metal
Plus Coating or Core Flux

0 N/A

Additives

0 N/A

Others Respirable Crystalline
Silica (Less than 1%)

See
Sec. V

ms

0 N/A

Hazardous Mixtures of Other Liquids, Solids or Gases

% TLV (Units)

Section III - Physical Data

Boiling Point (°F)

N/A

Specific Gravity (H₂O=1)

2.5

Vapor Pressure (mm Hg)

N/A

Percent Volatile by Volume (%)

N/A

Vapor Density (AIR=1)

N/A

Evaporation Rate

N/A

Solubility in Water

Moderate - 3%

Appearance and Color

Pale gray to buff color, odorless

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)

N/A

Flammable Limits

N/A

LEL

UEL

Extinguishing Media

N/A

Special Fire Fighting Procedures

N/A

Unusual Fire and Explosion Hazards

N/A

Section V - Health Hazard Data

Threshold Limit Value

Respirable Mass 5 mg/m³

Total Mass 15 mg/m³

Effects of Overexposure

May be harmful if inhaled over prolonged period and may cause delayed lung injury.

Emergency First Aid Procedures

N/A

Section VI - Reactivity Data

Stability

Unstable-

Conditions to Avoid

N/A

Stable

X

Incompatibility (Materials to Avoid)

N/A

Hazardous Decomposition Products

N/A

Hazardous Polymerization

May Occur

Conditions to Avoid

N/A

Will Not Occur

X

Section VII - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled

Vacuum if possible to avoid generating airborne dust. Avoid breathing dust. Wear

approved respirator. Avoid adding water, the product will become slippery when moistened.

Waste Disposal Method

Sanitary Landfill

Section VIII - Special Protection Information

Respiratory Protection (Society Type)

NIOSE/MSEA approved respirator

Ventilation

Local Exhaust

Required

Special

N/A

Mechanical (General)

N/A

Other

N/A

Protective Gloves

N/A

Eye Protection

Optional use of Goggles

Other Protective Equipment

N/A

Section IX - Special Precautions

Precautions to be Taken in Handling and Storing

Avoid breathing dust.

Use NIOSE/MSEA approved respirator where TLV limits for Crystalline Silica may be exceeded.

Other Precautions

Slippery when wet.

TEXACO INC.
INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL
SAFETY DATA SHEET



NOTE: NO REPRESENTATION IS MADE AS TO THE AC
HEREIN. SEE PAGE 7 FOR CONDITIONS UNDER

PERRO COPPER PRODUCTS COMPANY
HDS NUMBER - 0000-00-0000
APPROVAL:
ENVIRONMENTAL _____
SAFETY _____
REGISTRATION _____

Trade Name and Synonyms 75733 TEXSOLVE S-2	
Manufacturer's Name Texaco Chemical Company	Emergency Telephone No. (409) 722-8381
Address 4800 Fournace Place P.O. Box 430 Bellaire, TX 77401	
Chemical Name and/or Family or Description Mineral spirits	
THIS PRODUCT IS CLASSIFIED AS: <input checked="" type="checkbox"/> HAZARDOUS BY DEFINITION NO.(S) 1,5 <input type="checkbox"/> NOT HAZARDOUS: <input type="checkbox"/> ON ATTACHED EXPLANATION SHEETS	
WARNING STATEMENT: WARNING! CAUSES IRRITATION TO EYES MAY CAUSE IRRITATION TO SKIN COMBUSTIBLE	
OCCUPATIONAL CONTROL PROCEDURES	
Protective Equipment (Type)	
Eyes:	Chemical type goggles must be worn. Do not wear contact lenses.
Skin:	Protective clothing such as uniforms, coveralls or lab coats should be worn. Launder or dry clean when soiled. Gloves resistant to chemicals and petroleum distillates required.
Inhalation:	None required when handling at minimum feasible temperatures.
Ventilation:	Normal
Permissible Concentrations:	
Air:	None established
EMERGENCY AND FIRST AID PROCEDURES	
First Aid	
Eyes:	Flush thoroughly with water for at least fifteen minutes. Get medical attention.
Skin:	Wash exposed areas with soap and water.
Ingestion:	Do NOT induce vomiting. Aspiration may cause chemical pneumonia.
Inhalation:	Remove patient to fresh air. If not breathing, give mouth-to-mouth artificial respiration.
Other Instructions:	None.



PHYSIOLOGICAL EFFECTS:		Code No. 75733
Effects of Exposure		
Acute:		
Eyes:	Believed to cause moderate eye irritation.	
Skirt	Believed to be moderately irritating; Believed to cause redness, edema or drying of the skin.	
Respiratory System:	Overexposure to mist, vapors may cause dizziness, drowsiness, headache, nausea. Massive overexposure may cause unconsciousness, death.	
Chronic:	Prolonged or repeated skin contact may cause drying or cracking of skin. Similar products upon repeated and prolonged inhalation exposure to elevated concentrations were associated with kidney damage and cancer in male rats only. No similar effects were observed in mice or female rats.	
Other:	-	
Sensitization Properties:		
Skirt: Yes — No — Unknown <u>X</u>	Respiratory: Yes — No — Unknown <u>X</u>	
Median Lethal Dose (LD₅₀ LC₅₀) (Species)		
Oral	Believed to be > 5 g/kg (rat); practically non-toxic	
Inhalation	Believed to be 3400 ppm/4 hr exposure (rat)	
Dermal	Believed to be > 3 g/kg (rabbit); practically non-toxic	
Other	N. D.	
Irritation Index, Estimation of Irritation (Species)		
Skin	Believed to be 3-5/8.0 (rabbit); moderately irritating	
Eyes	Believed to be 25-50/110 (rabbit); moderately irritating	
Symptoms of Exposure	See above.	
FIRE PROTECTION INFORMATION		
Ignition Temp. °F.	450 F	Flash Point °F. (Method)
Flammable Limits (%)	Lower 1.1	Upper 6.1
Products Evolved When Subjected to Heat or Combustion:		
Carbon monoxide and carbon dioxide may be formed on burning in limited air supply.		
Recommended Fire Extinguishing Agents And Special Procedures:		
According to the National Fire Protection Guide 49, combustible liquid fires may be extinguished by water spray, dry chemical, foam or carbon dioxide. Use water to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to provide protection for persons attempting to stop the leak.		
Unusual or Explosive Hazards:		
None.		



ENVIRONMENTAL PROTECTION		Code No.
		75733
Waste Disposal Method: Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures and processes may change classification to non-hazardous or hazardous for reasons other than, or in addition to ignitability. (See Remarks for Waste Classification.)		
Procedures in Case of Breakage or Leakage: (Transportation Spills Call CHEMTREC (800) 424-9300) Avoid contact with eyes. Ventilate area. Avoid breathing vapor. Use self-contained breathing apparatus or supplied-air mask for large spills in confined area. Contain spill if possible. Wipe up or absorb on suitable material and shovel up.		
Remarks: Waste Classification: Product (as presently constituted) has the RCRA characteristic of ignitability and if discarded in its purchased form would have the hazardous waste number D001.		
PRECAUTIONS		
<p>WARNING! CAUSES IRRITATION TO EYES MAY CAUSE IRRITATION TO SKIN COMBUSTIBLE</p> <p>Avoid contact with eyes and prolonged contact with skin. Keep away from heat and flame. Use only in well-ventilated locations. Avoid prolonged breathing of mist or vapor. Keep head away from container when opening or dispensing. Wash thoroughly after handling.</p>		
Requirements for Transportation, Handling and Storage: Store away from heat and open flame. Placard required only when material is contained in packaging or container that exceeds 110 gallons, or in tank car or tank truck. Transport, handle, and store in accordance with OSHA Regulation 1910.106 and applicable DOT Regulations.		
DOT Proper Shipping Name: Petroleum Naphtha DOT Hazard Class (if applicable): Combustible Liquid, UN 1255		
CHEMICAL AND PHYSICAL PROPERTIES		
Boiling Point (°F) <u>305-335</u> Vapor Pressure <u>8 @ 38 C</u> (mmHg)		
Specific Gravity <u>0.774</u> (H ₂ O=1) Vapor Density <u>4.73</u> (Air=1)		
Appearance and Odor <u>Clear, colorless liquid; sweet naphtha odor</u>		
pH of undiluted product <u>N.A.</u> Solubility <u>Neg.</u>		
Percent Volatile by Volume <u>100</u> Evaporation <u>N.D.</u> ()=1		
Viscosity <u>N.D.</u> Other <u>-</u>		
Hazardous Polymerizations <u>-</u> Occur <u>X</u> Do not occur		
The Material Reacts Violently With: (If others is checked below, see additional comments on page 6 for further details)		
Air	Water	Heat
		Strong Oxidizers
		Others
		None of These
		<u>X</u>

N.D. - Not Determined
- Less Than

N.A. - Not Applicable
- Greater Than

**COMPOSITION**Code
No. 75733

Chemical/Common Name	CAS No.	Exposure Limit	Range in %
Mixture C9-C10 aliphatic hydrocarbons	64742887		100.00

Evaluation of this product indicates that it is hazardous according to OSHA Appendix A criteria and/or Texaco's hazard criteria.



DUCT SHIPPING LABEL

Code
No.

75733

75733 TEXSOLVE S-2

WARNING! CAUSES IRRITATION TO EYES
MAY CAUSE IRRITATION TO SKIN
COMBUSTIBLE

Avoid contact with eyes and prolonged contact with skin.
Keep away from heat and flame.
Use only in well-ventilated locations.
Avoid prolonged breathing of mist or vapor.
Keep head away from container when opening or dispensing.
Wash thoroughly after handling.

In case of contact, immediately flush eyes with plenty of
water for at least 15 minutes.
Wash skin with soap and plenty of water.
If swallowed, DO NOT induce vomiting.
Call a doctor immediately.

In case of fire use water spray, foam. dry chemical or CO2.

Chemical/Common Name	CAS No.	Range in %
Mixture C9-C10 aliphatic hydrocarbons	64742887	100.00

Valuation of this product indicates that it is hazardous according to OSHA
appendix A criteria and/or Texaco's hazard criteria.

HMIS	
Health	: 1
Reactivity	: 0
Flammability	: 2
Special	: -

DOT Proper Shipping Name: Petroleum Naphtha
DOT Hazardous Class : Combustible Liquid, UN 1255

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

HEALTH EMERGENCY TELEPHONE: (914) 831-3400 (EXT. 204)

Texaco Inc.
2000 Westchester Avenue
White Plains, New York 10650

For Additional Information Concerning:

Fuels/Lubricants/Antifreezes
call (914) 831-3400 (EXT. 204)
Chemicals/Additives
call (409) 722-8381
Transportation Spills
call CHEMTREC (800) 424-9300

**ADDITIONAL COMMENTS**Code
No. 75733

TEXACO INTENDS TO COMPLY FULLY WITH PROVISIONS OF THE TOXIC SUBSTANCES CONTROL ACT
STATE OF MICHIGAN CRITICAL MATERIALS ACT (REVISED 1985)
No critical materials present.

To determine applicability or effect of any law or regulation with respect to the product, users should consult his legal advisor or the appropriate government agency. Texaco does not undertake to furnish advice on such matters.

By F. E. BentleyDate 01-28-86☐ NewTitle Coordinator of Product Safety☒ Revised, Supersedes 01-09-86



THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED INDEPENDENTLY OF ANY SALE OF THE PRODUCT AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

EXPLANATION OF THE INDUSTRIAL HYGIENE, TOXICOLOGY, AND MATERIAL SAFETY DATA SHEET

PRODUCT INFORMATION

Trade Name and Synonyms

Refer to the code number and name under which the product is marketed and the common commercial name of the product.

Manufacturer's Name and Address Self explanatory.

Chemical Name and/or Family or Description

Refer to chemical, generic, or descriptive name of single elements and compounds.

For purposes of this form, a product is defined as hazardous if it possesses one or more of the following characteristics: (1) has a flash-point below 200 degrees Fahrenheit, closed cup or subject to spontaneous heating; (2) has a threshold limit value as established by the American Conference of Governmental Industrial Hygienists and/or the Occupational Safety and Health Administration (with exception to petroleum oil mist); (3) a single dose oral LD50 below 500 mg/kg; (4) causes burns to the skin in the short-term exposure or is systemically toxic by skin contact; (5) has been demonstrated to be a skin or eye irritant or causes respiratory irritation; (6) may cause skin or respiratory sensitization; (7) has teratogenic, mutagenic or other toxic effects; (8) may cause asphyxia or pneumoconiosis; (9) in the course of normal operations may produce dusts, gases, fumes, vapor, mist, or smoke which have one or more of the above characteristics; (10) contains a component which may be carcinogenic according to NTP (National Toxicology Program), IARC (International Agency for Research on Cancer), OSHA (Occupational Safety and Health Administration), EPA (Environmental Protection Agency) and/or NCI (National Cancer Institute); (11) has a median LC50 (RATS) in air of 200 ppm or less by volume of gas or vapor or 2.0 mg/l or less of mist, fume or dust when administered by continuous inhalation for one hour; (12) is a hazard as identified in the Product Shipping Label on page 5.

OCCUPATIONAL CONTROL PROCEDURES

(Consult your Industrial Hygienist or Occupational Health Specialist)

Protective Equipment

Type of protective equipment that is necessary for the safe handling and use of this product.

Ventilation

Normal means adequate to maintain permissible concentrations.

Ventilation: type, i.e. local exhaust, mechanical, etc.

Permissible Concentrations

Indicates Threshold Limit Value (TLV) and/or Time Weighted Average (TWA) as established by the American Conference of Governmental Industrial Hygienists and/or standards promulgated by the Occupational Safety and Health Administration.

EMERGENCY AND FIRST AID PROCEDURES

Administer first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

PHYSIOLOGICAL EFFECTS

Acute Exposures (Eye, Skin, Respiratory System)

Refers to the most common effects that would be expected to occur from direct contact with the product.

Chronic

Refers to the effects that are most likely to occur from repeated or prolonged exposure.

Sensitizer

Means a substance which will cause on or in normal living tissue, through an allergic or photodynamic process, a hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

Median Lethal Dose or Concentration (LD50, LC50)

Refers to that dose or concentration of the material which will produce death in 50 per cent of the animals. For inhalation, exposure time is indicated.

Irritation Index

Refers to an empirical score (Draize Method) for eye and skin irritation when tested by the method described. If numbers are not available, an estimated score indicates whether or not the material is an irritant.

FIRE PROTECTION INFORMATION

Ignition Temperature

Refers to the temperature in degrees Fahrenheit at which a liquid will give off enough flammable vapor to ignite and burn continuously for 5 seconds.

Flash Point (Method used)

Refers to the temperature in degrees Fahrenheit at which a liquid will give off enough flammable vapor to ignite.



Flammable Limits

Refers to the range of gas or vapor concentration (percent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper means the upper flammable limit given in percent.

Products Evolved When Subjected to Heat or Combustion

The products evolved when this material is subjected to heat or combustion. Includes temperature at which oxidation or other forms of degradation occurs.

Recommended Fire Extinguishing Agents and Special Procedures

Specifies the fire fighting agents that should be used to extinguish fires. If unusual fire hazards are involved or special procedures indicated, this is specified.

Unusual Fire or Explosive Hazards

Specifies hazards to personnel in case of fire, explosive danger.

ENVIRONMENTAL PROTECTION

Specifies how this product may be disposed.

Indicates precautions necessary in the event that leakage or breakage occurs. Included are (a) clean-up procedures, (b) personal protective equipment if necessary, (c) hazards that may be created, i.e. fire explosion, etc.

PRECAUTIONS

Label that is required or recommended.

Requirements for Transportation, Handling and Storage

Specifies handling and storage procedures. Gives ICC, DOT, or other regulations related to safety and health for transportation.

CHEMICAL AND PHYSICAL PROPERTIES

Boiling Point (or Range)

In degrees Fahrenheit or Celsius Boiling Point at 760 mmHg.

Vapor Pressure

Pressure exerted when a solid or liquid is in equilibrium with its own vapor.

Specific Gravity

The ratio of the density of the product to the density of water.

Vapor Density

The ratio of the density of the vapor at saturation concentration (20 degrees Celsius or 68 degrees Fahrenheit) to the density of air at 760 mmHg.

Appearance and Odor

Refers to the general characterization of the material, e.g. powder, colorless liquid, aromatic odor, etc.

pH

Refers to the degree of acidity or basicity of the material in a specific concentration.

pH1-5 - STRONGLY ACIDIC
pH5-7 - WEAKLY ACIDIC
pH7-9 - WEAKLY BASIC
pH9-14 - STRONGLY BASIC

Solubility

Refers to the solubility of a material by weight in water at room temperature. The term negligible, less than 0.1 %; slight, 0.1 to 1%; moderate, 1 to 10%; appreciable, 10% or greater. Gives solubility in organic solvents where appropriate.

Percent Volatile By Volume

Refers to the amount volatilized at 20 degrees Celsius or 68 degrees Fahrenheit when allowed to evaporate.

Evaporation

Gives the rate of evaporation compared to a standard.

Viscosity

Measure of flow characteristics in Kinematic viscosity in Centistokes.

Hazardous Polymerization

Hazardous polymerization is that reaction which takes place at a rate which produces large amounts of energy. Indicates whether it may or may not occur and under what storage conditions.

Does the Material React Violently

Indicates whether the material will react violently, releasing large amounts of energy when exposed under conditions listed.

Composition

Components of the product as required by OSHA (1910.1200) and one or more state Right to Know laws.

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS N/A TRADE NAME & SYNONYMS TRUST-X ACCELERATOR
 CHEMICAL FAMILY N/A FORMULA X<--MIXTURE
 MANUFACTURERS NAME: DYNA SYSTEMS A PARTSMaster CO DIV OF NCH
 ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE) P.O. BOX 655326 DALLAS, TEXAS 75265-5326
 PREPARED BY: MIKE COLE/T.S.CHEMIST PRODUCT CODE NUMBER 67051000 EMERGENCY TELEPHONE NUMBER 214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
TRICHLOROTRIFLUOROETHANE	ANESTHETIC	1000PPM	1000PPM	76-13-1
ALKYL ARYL AMINE	IRRITANT	5 PPM	N/A	N/A

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	117.6	SPEC GRAVITY (H2O=1)	1.40
VAPOR PRESSURE (MM HG)	334	COLOR	WHITE TO STRAW

TRUST-X ACCELERATOR

(CONTINUED) SECTION III - PHYSICAL DATA PAGE : 02

VAPOR DENSITY (AIR=1)	2.9	ODOR	SLIGHT ODOR
PH @ 100%	N/A	CLARITY	WATERY LIQUID
PERCENT VOLATILE BY VOLUME (%)	100	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	0.2G/100#25C		
VISCOSITY	N/A		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	> 200 F.TCC	FLAMMABLE LIMITS	N/A	LEL	N/A	UEL	N/A
EXTINGUISHING MEDIA	"ALCOHOL" X<--FOAM	X<--CO2	DRY X<--CHEMICAL	WATER X<--SPRAY	X<--OTHER		

SPECIAL FIRE FIGHTING PROCEDURES
 SELF-CONTAINED RESPIRATORY EQUIPMENT.

UNUSUAL FIRE & EXPLOSION HAZARDS
 N/A

NFPA HAZARD RATING (0=INSIGNIFICANT;1=SLIGHT;2=MODERATE;3=HIGH;4=EXTREME):
 3<--HEALTH 2<--FLAMMABILITY 0<--REACTIVITY <--SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :
 985 PPM
 EFFECTS OF OVEREXPOSURE
 - ACUTE - (SHORT TERM EXPOSURE)
 LIGHT HEADEDNESS, GIDDINESS, SHORTNESS OF BREATH, POSSIBLE NARCOSIS POSSIBL
 E CARDIAC ARRHYTHMIAS AT HIGH CONCENTRATIONS.
 - CHRONIC - (LONG TERM EXPOSURE)
 LIGHT HEADEDNESS, GIDDINESS, SHORTNESS OF BREATH, POSSIBLE NARCOSIS POSSIBL
 E CARDIAC ARRHYTHMIAS AT HIGH CONCENTRATIONS.

CERO COPPER PRODUCTS COMPANY
 MSDS NUMBER - CCPC-00-0275

APPROVALS:
 ENVIRONMENTAL: _____
 SAFETY: _____
 PURCHASING: _____

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
N/A		
THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.		
IF UE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND LABELED FOR MAINTAINING MOTOR VEHICLES.		

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS

<--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

SHIPPING NAME

HAZARD CLASS

ID NUMBER REPORT QTY

LABELS

LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER

NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

SECTION XIII - REFERENCES

MANUFACTURER'S MATERIAL SAFETY DATA SHEET.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

DYNA SYSTEMS A PARTSMaster CO DIV OF NCH ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

(023828-0271# -40135925-67004921) DATE OF ISSUE 12/15/88 SUPERSEDES 11/11/87

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS
N/A TRADE NAME & SYNONYMS
DYNA DEBONDER
CHEMICAL FAMILY
N/A FORMULA
X--MIXTURE
MANUFACTURERS NAME:
DYNA SYSTEMS A PARTSMaster CD DIV OF NCH
ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE)
P.O. BOX 655326
DALLAS, TEXAS 75265-5326
PREPARED BY: RICHARD STOLLEY/T.S.CHEM. PRODUCT CODE NUMBER 67004921 EMERGENCY TELEPHONE NUMBER 214-438-1381

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
ACETONITRILE(SKIN ABSORPTION)	**	40PPM 1.	70MG/M3 1.	75-05-8
**FLAM/TOX/IRR				

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	170 F	SPEC GRAVITY (H2O=1)	0.859
VAPOR PRESSURE (MM HG)	N/A	COLOR	COLORLESS TO PINK

DYNA DEBONDER

(CONTINUED)

SECTION III - PHYSICAL DATA

PAGE : 02

VAPOR DENSITY (AIR=1)	1.41	ODOR	ETHEREAL ODOR
PH @ 100%	N/A	CLARITY	N/A
PERCENT VOLATILE BY VOLUME (%)	N/A	EVAPORATION RATE (BU AC)	N/A
SOLUBILITY IN WATER	100%		
VISCOSITY	NON-VISCOUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	FLAMMABLE LIMITS	N/A LEL	N/A UEL
43 F T.C.C.			
EXTINGUISHING MEDIA "ALCOHOL" X--FOAM	X--CO2 --CHEMICAL	DRY WATER SPRAY	--OTHER

SPECIAL FIRE FIGHTING PROCEDURES
THE BEST EXTINGUISHING AGENT IS A MECHANICAL FOAM OF THE ALCOHOL TYPE.
WATER SHOULD BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS
WEAR SELF-CONTAINED BREATHING APPARATUS, WEAR GOGGLES IF EYE PROTECTION IS NOT PROVIDED.

NFPA HAZARD RATING (0=INSIGNIFICANT;1=SLIGHT;2=MODERATE;3=HIGH;4=EXTREME):
2 --HEALTH 3 --FLAMMABILITY 0 --REACTIVITY --SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :

NOT ESTABLISHED FOR MIXTURE. SEE SECTION II.

EFFECTS OF OVEREXPOSURE.

- ACUTE - (SHORT TERM EXPOSURE)
HIGH CONCENTRATION CAN CAUSE SYMPTOMS OF WEAKNESS, FLUSHING OF THE FACE AND SOME TEMPORARY BRONCHIAL TIGHTNESS.

- CHRONIC - (LONG TERM EXPOSURE)
HIGH CONCENTRATION CAN CAUSE SYMPTOMS OF WEAKNESS, FLUSHING OF THE FACE AND SOME TEMPORARY BRONCHIAL TIGHTNESS.

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0276

APPROVALS:

ENVIRONMENTAL: (PRIOR)

SAFETY: (PRIOR)

PURCHASING: (PRIOR)

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
ACETONITRILE	75-05-8	10

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

IF UE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS				
<--49 CFR	<--IMCO	<--TARIFF 6 D	<--IATA	<--MILITARY AIR (AFR 71-4)
SHIPPING NAME				
HAZARD CLASS		ID NUMBER	REPORT QTY	
LABELS		LIMITED QTY		
UNIT CONTAINER				
DOT SPS CONTAINER		NET EXPLOSIVE WT.		
AEROSOL PROPELLANT(S)				

SECTION XIII - REFERENCES

1. THRESHOLD LIMIT VALUES AND BIOLOGICAL EXPOSURE INDICES, 1987-1988.
2. DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, 6TH EDITION
N. IRVING SAX.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED ACCURATE IN LIGHT OF CURRENT FORMULATION, HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

DYNA SYSTEMS A PARTSMaster CO DIV OF NCH ASSUMES NO RESPONSIBILITY FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

(023828-0271# -40135925-67004920) DATE OF ISSUE 04/24/89 SUPERSEDES 03/22/89

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS ALFA CYANOACRYLATE	TRADE NAME & SYNONYMS GAPPER ADHESIVE	
CHEMICAL FAMILY CYANOACRYLATE	FORMULA X<--MIXTURE	
MANUFACTURERS NAME: DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH		
ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE) P.O. BOX 855326 DALLAS, TEXAS 75265-5326		
PREPARED BY: MIKE COLE/T.S.CHEMIST	PRODUCT CODE NUMBER 67004920	EMERGENCY TELEPHONE NUMBER 214-438-1381

SECTION II - HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
ETHYL CYANOACRYLATE	IRRITANT	2PPM	N/A	7085-85-0
POLY METHYL METHACRYLATE *	IRRITANT	N/A	N/A	9011-14-7

* SEE SECTION XII

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT) 149 F SPEC GRAVITY (H2O=1) 1.07@ 80 F

GAPPER ADHESIVE

(CONTINUED) SECTION III - PHYSICAL DATA PAGE : 02

VAPOR PRESSURE (MM HG.)	20 C	COLOR	TRANSPARENT
VAPOR DENSITY (AIR=1)	20 C	ODOR	STIMULATIVE SMELL
PH @ 100%	N/A	CLARITY	N/A
PERCENT VOLATILE BY VOLUME (%)	N/A	EVAPORATION RATE (BU AC = 1)	N/A
SOLUBILITY IN WATER	INSOLUBLE		
VISCOSITY	N/A		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	176 F T.C.C.	FLAMMABLE LIMITS	N/A	LEL	N/A	UEL
EXTINGUISHING MEDIA	X<--FOAM X<--CO2 X<--CHEMICAL X<--WATER SPRAY X<--OTHER					
SPECIAL FIRE FIGHTING PROCEDURES AS WITH ALL FIRES INVOLVING CHEMICALS, WEAR SCBA AND FULL PROTECTIVE GEAR.						

UNUSUAL FIRE & EXPLOSION HAZARDS
N/ANFPA HAZARD RATING (0=INSIGNIFICANT; 1=SLIGHT; 2=MODERATE; 3=HIGH; 4=EXTREME):
3<--HEALTH 2<--FLAMMABILITY 0<--REACTIVITY <--SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :

2PPM

EFFECTS OF OVEREXPOSURE

- ACUTE - (SHORT TERM EXPOSURE)
THE ADHESIVE BONDS SKIN RAPIDLY AND STRONGLY, IRRITATES EYES AND MUCOUS MEMBRANES.

- CHRONIC - (LONG TERM EXPOSURE)
THE ADHESIVE BONDS SKIN RAPIDLY AND STRONGLY, IRRITATES EYES AND MUCOUS

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0277APPROVALS:
ENVIRONMENTAL: (PRIOR)
SAFETY: (PRIOR)
PURCHASING: (PRIOR)

CHEMICAL NAME	C.A.S. NUMBER	UPPER % LIMIT
---------------	---------------	---------------

N/A

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IF UE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS

<--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

SHIPPING NAME

HAZARD CLASS

| ID NUMBER | REPORT QTY

LABELS

| LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER

| NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

SECTION XIII - REFERENCES

MANUFACTURER'S MATERIAL SAFETY DATA SHEET.
* INGREDIENT PERCENTAGE IS A TRADE SECRET;
MASS. TRADE SECRET NUMBER 99-127-001.

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THIS SPACE RESERVED FOR SPECIAL USE.

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*** III PHYSICAL DATA ***

**PRODUCT INFORMATION

BOILING POINT : NA (F) NA (C) % VOLATILE BY VOLUME:<5
VAPOR PRESSURE(20 C): NA MM HG EVAPORATION RATE :NEG.
VAPOR DENSITY(AIR=1): NA (BUTYL ACETATE=1)
FREEZING POINT : NA (F) NA (C) SPECIFIC GRAVITY :1.04
MELTING POINT : NA (F) NA (C) (WATER=1)
PHYSICAL STATE : SOLID DENSITY :1042.5 KG/M3
ODOR : ACETIC ACID ACID/ALKALINITY :UNKNOWN MEG/G
COLOR : CLEAR PH :NA
ODOR THRESHOLD : 1.0 (PPM)
SOLUBILITY IN WATER(20C): INSOLUBLE
SOLUBILITY IN ORGANIC SOLVENT: SLIGHTLY SOLUBLE, AROMATIC
(STATE SOLVENT)

METHYLTRIACTOXYLSILANE

BOILING POINT : 240 (F) 115.5(C)
VAPOR PRESSURE(20 C) : UNKN MM HG
VAPOR DENSITY(AIR=1) : 2

*** IV FIRE AND EXPLOSION DATA ***

FLASH PT: NA (F) NA (C) BY NA IGNITION TEMP: NA (F) NA (C)
FLAMMABLE LIMITS IN AIR(%): LOWER NA UPPER NA
SENSITIVITY TO MECHANICAL IMPACT (Y/N): N
SENSITIVITY TO STATIC DISCHARGE:
SENSITIVITY TO STATIC DISCHARGE IS NOT EXPECTED.
EXTINGUISHING MEDIA:
ALL STANDARD FIREFIGHTING MEDIA
SPECIAL FIREFIGHTING PROCEDURES:
NONE KNOWN.

*** V REACTIVITY DATA ***

STABILITY: HAZARDOUS:
X STABLE UNSTABLE POLYMERIZATION WILL NOT OCCUR
HAZARDOUS DECOMPOSITION/COMBUSTION PRODUCTS:
SILICON DIOXIDE.
ACETIC ACID.
INCOMPATIBILITY (MATERIALS TO AVOID):
CONTACT WITH OXIDIZING AGENTS.
APPLIES IN UNCURED STATE.
CONDITIONS TO AVOID:
NONE KNOWN.

MATERIAL SAFETY DATA SHEET
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*** VI HEALTH HAZARD DATA ***

ACUTE SIGNS/EFFECTS OF OVEREXPOSURE:

INGESTION:

NONE KNOWN

SKIN CONTACT:

UNCURED PRODUCT CONTACT WILL IRRITATE LIPS, GUMS AND TONGUE.

UNCURED PRODUCT CONTACT MAY IRRITATE THE SKIN.

INHALATION:

CAUSES MILD RESPIRATORY IRRITATION.

HARMFUL IF INHALED.

APPLIES ONLY IN UNCURED STATE.

EYE CONTACT:

UNCURED PRODUCT CONTACT IRRITATES EYES.

MEDICAL CONDITIONS AGGRAVATED:

NONE KNOWN.

RESPIRATORY

OTHER:

ACETIC ACID RELEASED DURING CURING.

CHRONIC EFFECTS OF OVEREXPOSURE:

NONE KNOWN.

EMERGENCY AND FIRST AID PROCEDURES:

1 INGESTION:

RINSE MOUTH WITH WATER SEVERAL TIMES.

SKIN:

TO CLEAN FROM SKIN, REMOVE COMPLETELY WITH A DRY CLOTH OR PAPER TOWEL, BEFORE WASHING WITH DETERGENT AND WATER.

INHALATION:

MOVE PERSON TO FRESH AIR.

EYES:

IN CASE OF CONTACT, IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION.

NOTE TO PHYSICIAN:

NONE KNOWN.

TOXICITY:

ACUTE ORAL LD50:

METHYLTRIACTOXYLSILANE

2060 (RAT)

MG/KG

ACUTE DERMAL LD50:

UNKNOWN

MG/KG

ACUTE INHALATION LC50:

UNKNOWN

OTHER:

NONE.

AMES TEST:

UNKNOWN

PRINCIPALS ROUTES OF EXPOSURE:

DERMAL - SKIN.

INHALATION.

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THIS PRODUCT OR ONE OF ITS INGREDIENTS PRESENT 0.1% OR MORE
IS NOT LISTED AS A CARCINOGEN OR SUSPECTED CARCINOGEN BY
NTP, IARC, OR OSHA
PRODUCTS/INGREDIENTS

THIS SPACE RESERVED FOR SPECIAL USE.

PREVENTATIVE MEASURES (SECTIONS VII, VIII, IX)

*** VII SPECIAL PROTECTIVE EQUIPMENT ***

RESPIRATORY PROTECTION:

USE IN A WELL VENTILATED AREA.

PROTECTIVE GLOVES:

CLOTH GLOVES.

EYE AND FACE PROTECTION:

SAFETY GLASSES.

OTHER PROTECTIVE EQUIPMENT:

NONE KNOWN.

VENTILATION:

USE ONLY IN WELL VENTILATED AREA.

*** VIII SPILL, LEAK AND DISPOSAL PROCEDURES ***

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:

WIPE, SCRAPE OR SOAK UP IN AN INERT MATERIAL AND PUT IN A
CONTAINER FOR DISPOSAL.

WASH WALKING SURFACES WITH DETERGENT AND WATER TO REDUCE SLIP-
PING HAZARD.

WEAR PROPER PROTECTIVE EQUIPMENT AS SPECIFIED IN THE PROTECTIVE
EQUIPMENT SECTION.

INCREASE AREA VENTILATION.

DISPOSAL METHOD:

DISPOSAL SHOULD BE MADE IN ACCORDANCE WITH FEDERAL, STATE AND
LOCAL REGULATIONS.

*** IX SPECIAL PRECAUTIONS ***

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

KEEP CONTAINER CLOSED WHEN NOT IN USE.

AVOID CONTACT WITH SKIN AND EYES.

USE ONLY IN A WELL VENTILATED AREA.

REMOVE CONTACT LENSES BEFORE USING SEALANT. DO NOT HANDLE
LENSES UNTIL ALL SEALANT HAS BEEN CLEANED FROM THE FINGER-
TIPS, NAILS AND CUTICLES. RESIDUAL SEALANT MAY REMAIN ON
FINGERS FOR SEVERAL DAYS AND TRANSFER TO LENSES AND CAUSE
SEVERE EYE IRRITATION.

PRODUCT RELEASES ACETIC ACID DURING APPLICATION AND CURING.

USE MECHANICAL VENTILATION TO STAY BELOW TLV OF 10 PPM ACETIC
ACID.

ENGINEERING CONTROLS:

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EXHAUST VENTILATION
EYEWASH STATIONS.
USE IN A WELL VENTILATED AREA.
LOCALIZED VENTILATION SHOULD BE USED TO CONTROL DUST LEVELS.

*** X SHIPPING AND REGULATORY CLASSIFICATION DATA ***

DOT SHIPPING NAME: NONE
DOT HAZARD CLASS: NONE
DOT LABELS(S): NONE
UN/NA NUMBER: NONE
PLACARDS:
NONE
EXPORT:
NA

EPA HAZARD WASTE: NA

SARA HAZARD CLASS:
TO BE DETERMINED

WHMIS HAZARD CLASS:
D2B TOXIC MATERIALS

CFLC CLASSIFICATION: NA

TRANSPORTATION CLASS: NA
RID (OCTI) NA
ADR (ECE) NA
RAR (IATA) NA

NFPA/HMIS CLASSIFICATION FLAMMABILITY 0 , REACTIVITY 0 , HEALTH 2

SCHEDULE B:

ECCN:

ADDITIONAL INFORMATION:

THIS PRODUCT OR ITS COMPONENTS ARE ON THE EUROPEAN INVENTORY OF
EXISTING COMMERCIAL CHEMICALS (EINECS).....

.....
THESE DATA ARE OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT
AS A PRODUCT SPECIFICATION. NO WARRANTY, EITHER EXPRESSED OR
IMPLIED, IS MADE. THE RECOMMENDED HANDLING PROCEDURES ARE
BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD
REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTENT OF THE
INTENDED USE.....

.....
C = CEILING LIMIT NEGL = NEGLIGIBLE
EST= ESTIMATED NF = NONE FOUND
NA = NOT APPLICABLE UNKN = UNKNOWN

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NE = NONE ESTABLISHED	REC = RECOMMENDED
ND = NONE DETERMINED	V = RECOMM. BY VENDOR
BY-PRODUCT = REACTION BY-	SKN = SKIN
PRODUCT, TSCA INVENTORY	TS = TRADE SECRET
STATUS NOT REQUIRED UNDER	R = RECOMMENDED
40 CFR PART 720.30(H-2)	MST = MIST

.....

ENVIRONMENTAL DATA
HAZARD DATA
REMARKS: _____

COMPOSITE TECHNOLOGY, INC.

MATERIAL SAFETY DATA SHEET
PLASTICS

I. PRODUCT IDENTIFICATION

Distributor: Composite Technology, Inc. ①
Address: 1005 Blue Mound Road
Fort Worth, Texas 76131
Emergency Telephone: 817-232-1127
Chemical Name and Synonyms: Plastics ②
Chemical Family: Plastics
Formula: Mixture

II. PRODUCT DESCRIPTION AND HAZARDOUS INGREDIENTS/IDENTITY INFORMATION:

See Chart Inside

III. PHYSICAL DATA

Melting Point F (C): See Chart
Vapor Pressure: Not Applicable
Vapor Density (Air = 1): Not Applicable
Solubility in Water: Negligible
Appearance and Odor: Various colors from white to black,
in sheet, plate, bar, structurals
or tubing.
Specific Gravity($H_2O = 1$): See Chart
% Volatile by Volume (%): Not Applicable
Evaporation Rate: Not Applicable

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point F(C): Not Applicable
Extinguishing Media: Use Methods applicable to
surrounding area.
Special Fire Fighting Procedures: Use self-contained
breathing apparatus
for protection against
degradation products
from surroundings
materials.
Flammable Limits: Not Applicable
Unusual Fire and Explosion Hazards: None

V. HEALTH HAZARD DATA

Applicable Statutory of Recommended Occupational
Exposure Limits: See Section II - Hazardous Ingredients.
No TLV exists for plastic products, the hazards
associated with plastic are for the individual
constituents.

Emergency and First Aid Procedures: In the event of acute exposure, remove to fresh air, administer oxygen, and seek a physician's assistance.

VI. REACTIVITY DATA

Stability: Considered Stable

Incompatibility: Not incompatible with materials.

Hazardous Polymerization: Not Applicable

Hazardous Decomposition Products: See Chart

Conditions to Avoid: When heated to decomposition or composition temperatures products of decomposition include carbon dioxide, carbon monoxide and other volatiles as indicated.

VII. SPILL OR LEAK PROCEDURES

Steps to be Taken in Case Material is Released or Spilled: Not Applicable

Waste Disposal Method: Approved method of solid waste disposal.

VIII. SPECIAL PROTECTION INFORMATION

When machining thermosetting plastic dry, a dusty condition may result. A suitable dust collection system should be employed along with a dust mask for respiratory protection. A protective cream or clothing should be used to protect skin for worker comfort. When machining any plastics, safety glasses or a face shield should be used.

IX. SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storing: Not Applicable

Other Precautions: When fighting fires where plastics are burning a self contained breathing apparatus (SCBA) must be used.

Date Prepared: February 24, 1987
Issued by: Composite Technology, Inc.

GRADE	SPECIFIC GRAVITY	MELTING POINT °F	FLASH IGNITION TEMP. °F	HAZARDOUS PRODUCTS OF COMBUSTION
THERMOSETS				
Resin Reinforcement				
Epoxy Glass	1.65 - 2.20	DNM*	Non-Volatile	Carbon Monoxide - Formaldehyde-Hydrogen Bromide
Polyester Glass	1.55 - 2.00	DNM	650	Carbon Monoxide
Vinyl Ester Glass	1.52 - 1.95	DNM	650	Carbon Monoxide
Polyester FR Glass	1.55 - 2.00	DNM	650	Carbon Monoxide - Hydrogen Bromide
Vinyl Ester FR Glass	1.52 - 1.95	DNM	650	Carbon Monoxide - Hydrogen Bromide

* = DOES NOT MELT

GARON PRODUCTS, INC. 1924 HIGHWAY 35 WALL, NJ 07719 201-449-1776

MATERIAL SAFETY DATA SHEET

DATE: 6/86

SECTION I - IDENTIFICATION

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0294
APPROVALS:
ENVIRONMENTAL: (PRIOR)
SAFETY: (PRIOR)
PURCHASING: (PRIOR)

MANUFACTURER'S NAME:

GARON PRODUCTS, INC. (1)
1924 HIGHWAY 35 CN20
WALL, NJ 07719

PRODUCT NAME: WEED-X (✓)

COMMON NAME: Monobor Chlorate +
Diuron

CHEMICAL TYPE: Herbicide

SECTION II - SHIPPING DATA

SHIPPING NAME: Not regulated by D.O.T.

HAZARD CLASS: None

REPORTABLE QUANTITY (RQ): 8000 lbs. (Diuron)

LABELS REQUIRED: None

C.A.S. NUMBER: 7775-09-1 &
7775-19-1

PLACARD: None

HAZARDOUS WASTE NO.: None

D.O.T. NUMBER: None

E.P.A. REGISTRATION NO.: 7001-337-44584

SECTION III - HAZARDOUS INGREDIENTS

<u>CHEMICAL NAME AND SYNONYMS:</u>	<u>CHEMICAL FORMULA</u>	<u>WT%</u>	<u>TLV</u>	<u>LD50</u>
Sodium Chlorate	NaClO_3	30	NE	2330-3500
Sodium Metaborate Tetrahydrate	$\text{Na}_2\text{B}_2\text{O}_4 \cdot 4\text{H}_2\text{O}$	66.5		
Diuron 3-(3,4-dichlorophenoxy)-1,1-dimethylurea	$\text{C}_9\text{H}_{10}\text{Cl}_2\text{N}_2\text{O}_2$	1.25		

BOILING POINT:	N/A	‡ VOLATILES (BY VOLUME):	0
DENSITY:	54 lbs/ft	VAPOR PRESSURE, mm Hg:	N/A
APPEARANCE:	Off white, odorless granular solids		
FLASH POINT:	N/A		
REACTION WITH WATER:	None		
EXTINGUISHING MEDIA:	Flood with water		
SOLUBILITY IN WATER:	> 2 lbs/gal @ 68 F		

INGESTION: Acute oral LD (rats) 2330-3500 mg/Kg. Farm Chemicals Handbook, 1980.

INHALATION: Irritation of mucous membranes and possible ulceration of nasal septum.

SKIN ABSORPTION: No information on dermal toxicity available.

SKIN CONTACT: Moderate skin irritant.

EYE CONTACT: Moderate eye irritant.

EFFECTS OF OVERDOSE: Dust may irritate eyes, skin and mucous membranes. Ingestion of large quantities might prove fatal with symptoms of gastritis. Abdominal pains, nausea, diarrhea, vomiting, cyanosis and collapse. May cause methemoglobinemia and a late toxic nephritis.

EMERGENCY AND FIRST AID PROCEDURES:

EYES - Flush with stream of water for 15 minutes and get medical attention.

SKIN - Wash with large quantities of soap and water.

INGESTION - Dilute by drinking soapy water to induce vomiting. Get medical attention. Gastric lavage followed by saline catharsis. Test for methemoglobinemia and treat. Hemodialysis is recommended for removal of chlorates.

MATERIAL SAFETY DATA
WEED-X

DATE: 6/86

SECTION VI - PERSONAL PROTECTION DATA

VENTILATION: General room ventilation plus special exhaust at points of dust emission. Systems should discharge through a water scrubber.

RESPIRATORY PROTECTION: Dust mask where appropriate.

PROTECTIVE CLOTHING: Washable head covering, cotton coveralls laundered daily; rubber gloves and rubber footwear.

EYE PROTECTION: Chemical safety glasses.

OTHER: Safety shower and eye wash fountain.

SECTION VII - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (TEST METHOD): None

AUTOIGNITION TEMPERATURE: Not Combustible

FLAMMABLE LIMITS (% BY VOLUME): N/A

EXTINGUISHING MEDIA: Flood with water. Sodium Chlorate decomposes at 570 F and supplies its own oxygen, hence smothering type fire extinguishing agents not effective.

SPECIAL FIRE FIGHTING PROCEDURES: Approach upwind from fire. Evacuate people downwind from fire. Wear self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Sodium Metaborate is a fire retardant. Sodium Chlorate is a strong oxidizing agent and is an extreme fire & explosion hazard when in contact with organics, acid paper, oil, or solvents.

SECTION VIII - REACTIVITY DATA

CONDITIONS TO AVOID: Heat, uncontrolled contact with strong acids, organics, chemicals, phosphorous, sulfur, sulfides, powdered metals, ammonium compounds, organic matter, carbon, etc.

STABILITY (NORMAL CONDITIONS) STABLE (X) UNSTABLE ()

MATERIAL SAFETY DATA

WEED-X

DATE: 6/86

INCOMPABILITY (MATERIALS TO AVOID): Sodium Chlorate can react violently with strong acids, organic substances, sulfur and sulfides, powdered metals. phosphorous, ammonium compounds, decomposed by high temperatures.

HAZARDOUS DECOMPOSITION PRODUCTS: Oxygen and possible unstable chlorine dioxide which decomposes spontaneously to Chlorine.

HAZARDOUS POLYMERIZATION () May Occur (X) Will Not Occur

SECTION IX - ENVIRONMENTAL PROTECTION DATA

ENVIRONMENTAL PRECAUTIONS: Toxic to fish. Low toxicity to wild life.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Sweep up or vacuum in a dry state on wood floors. Sweep up or vacuum, then flush with water on concrete or metal floors. Remove contaminated clothing at once and wash before using.

WASTE DISPOSAL PROCEDURES: Make a slurry using water and blend with bisulfites or Ferrous salts and sulfuric acid. Neutralize with soda or muriatic acid. Bury in state approved toxic waste disposal landfill site.

SECTION X - HANDLING AND STORAGE PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Store in cool, dry, fire resistant area; separate from acid, solvents, oils, organic substances, sulfur, sulfides, powdered metals, ammonium salts, etc. and away from fire hazards. Do not store on wood floors.

PROPER SHIPPING NAME: Not regulated by D.O.T.

HAZARD CLASS: None

LABEL(S) REQUIRED (IF NOT EXEMPTED): None required

() FLAMMABLE () OXIDIZER () CORROSIVE () POISON



MATERIAL SAFETY DATA SHEET FOR

MATERIAL IDENTIFICATION

NUMBER : M0000026
NAME : "Telar" Herbicide

MUG-A-BUG
RT. 51 NORTH BOX 78
FORSYTH, IL 62535
217 875-3303

GRADE : 75% Formulation
CHEMICAL FAMILY : Sulfonylureas

CAS NAME : (See Additional Information Section)

MANUFACTURER/DISTRIBUTOR : E.I. du Pont de Nemours & Co., Inc.
1007 Market Street
Wilmington, DE
19898

PRODUCT INFORMATION PHONE : 1-(800)441-7515
TRANSPORTATION EMERGENCY PHONE (CHEMTREC) : 1-(800)424-9300
MEDICAL EMERGENCY PHONE : 1-(800)441-3637

HAZARDOUS COMPONENTS

Material	CAS Number	%
Chlorsulfuron	64902-72-3	75

PHYSICAL DATA

Melting Point : 174 to 178 deg C (A.I.)
Specific Gravity : 0.59 at 25 deg C.
Vapor Pressure : Nil. mm Hg at 25 deg C.
Solubility in Water : Disp.
Odor : None
Form : Solid
Color : White to tan
Dry flowable granules. Bulk Density 30 to 36 lb/cu. ft.

HAZARDOUS REACTIVITY

Instability : Stable.
Incompatibility : None reasonably foreseeable.
Decomposition : Decomposes with heat.
Polymerization : Polymerization will not occur.

FIRE AND EXPLOSION DATA

May be ignited by heat or open flame.

FIRE AND EXPLOSION HAZARDS

Dust forms explosive mixture with air.

THE DATA IN THIS MATERIAL SAFETY DATA SHEET RELATES ONLY TO THE SPECIFIC MATERIAL DESIGNATED
HEREIN AND DOES NOT RELATE TO USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY PROCESS

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Du Pont Material Safety Data Sheet

Page 2

MSDS no: M0000026

(FIRE AND EXPLOSION DATA - CONTINUED)

EXTINGUISHING MEDIA

Water Spray. Dry Chemical.

SPECIAL FIRE FIGHTING INSTRUCTIONS

Wear self-contained breathing apparatus. Cool tank/container with water spray.

OTHER PHYSICAL HAZARDS

If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated.

HEALTH HAZARD INFORMATION

Principal Health Hazards

CAUTION! May irritate eyes, nose and throat.

ROUTES OF EXPOSURES AND EFFECTS:

ORAL (fasted rat): LD50 3,053 mg/kg (male); 2,341 mg/kg (female)

DERMAL (rabbit): (Active ingredient) LD50 greater than 3,400 mg/kg.

SKIN IRRITATION AND SENSITIZATION: (Active ingredient) Not a skin irritant (rabbits) or a sensitizer (guinea pigs).

EYE CONTACT: Administration of 10 mg to rabbit eye produced very mild temporary conjunctival irritation.

Other Health Hazards

CHRONIC STUDIES:

CHRONIC ORAL-No observable effect levels of 100 ppm in the diets of rats for 2 year and 500 ppm in the diet of mice for 2 years. No oncogenic effects at any level; highest level fed was 2,500 ppm rats and 5,000 ppm mice.

REPRODUCTION: (rats) The dietary presence of chlorsulfuron at 500 ppm had no adverse effect on the reproduction or lactation performance of young adult rats (3-generation, 2-litters per generation).

TERATOGENICITY: Not teratogenic in rats at 2,500 ppm or up to 75 mg/kg in rabbits.

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(HEALTH HAZARD INFORMATION - CONTINUED)

MUTAGENICITY: Not mutagenic in Ames bacterial assay, Chinese Hamster Ovary mammalian cell assay, rat dominants lethal assay, in vitro cytogenetic assay, or DNA repair assay.

Carcinogenicity

None of the components in this chemical is listed by IARC, NTP, or OSHA as a carcinogen.

Exposure Limits

AEL (DuPont) : 10 mg/cu. M (8 and 12 hr TWA)
TLV * (ACGIH) : None Established
PEL (OSHA) : None Established

* TLV is a registered trademark.

Safety Precautions

Avoid breathing vapors or mist. Avoid contact with eyes. Avoid contact with skin. Avoid contact with clothing. Avoid breathing dust. Wash thoroughly after handling.

FIRST AID

INHALATION

If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

SKIN CONTACT

Flush skin with water after excessive contact.

EYE CONTACT

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

INGESTION

If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Never give anything by mouth to an unconscious person. Call a physician.

PROTECTION INFORMATION

Generally Applicable Control Measures and Procedures

Use only with adequate ventilation. Keep away from heat, sparks and flames. Keep container tightly closed. Do not consume food, drink or tobacco in the areas where they may become contaminated with this material.

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(PROTECTION INFORMATION - CONTINUED)

Personal Protective Equipment

Eye/Face : Coverall chemical splash goggles.

Respirator :

Filter Respirator : Approved pesticide respirator if exposure may exceed AEL value.

Additional : Protective clothing

DISPOSAL INFORMATION

Aquatic Toxicity : Rainbow Trout LD50 (96) greater than 250 ppm.

Spill, Leak, or Release

NOTE: Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.

Dike spill. Prevent liquid from entering sewers, water ways or low areas. Soak up with sawdust, sand, oil dry or other absorbent material. Shovel or sweep up.

Waste Disposal

Treatment, storage, transportation and disposal must be in accordance with Federal, State, and Local regulations. Remove nonusable solid material and/or contaminated soil, for disposal in an approved and permitted landfill. Do not flush to surface water or sanitary sewer system.

Do not reuse container. Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incinerator, or if allowed by State and local authorities by burning.

SHIPPING INFORMATION

Domestic - Other than Air (DOT)

Name : Weed Killing Compound, N.O.I.B.N.

Special Information : Not regulated under D.O.T.

Additional Information

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Du Pont Material Safety Data Sheet

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MSDS no: M0000026

STORAGE CONDITIONS

Store in well ventilated area. Keep container tightly closed. Do not store or consume food, drink or tobacco in area where they may become contaminated with this material.

ADDITIONAL INFORMATION AND REFERENCES

Material Identification-CAS Name (Cont'd.):
2-Chloro-N-[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)amino
carbonyl]benzenesulfonamide

Date of latest Revision : 86/02/28
Person Responsible for MSDS : Registration & Regulatory Aff.
Agricultural Products Dept.
Wilmington, DE 19898

MATERIAL SAFETY DATA SHEET : INSTANT ADHESIVE PAGE : 01
 (023828-02710 -40135925-67004910) DATE OF ISSUE 05/20/88 SUPERSEDES 11/11/87

SECTION I - GENERAL INFORMATION

CHEMICAL NAME & SYNONYMS N/A	TRADE NAME & SYNONYMS INSTANT ADHESIVE
CHEMICAL FAMILY METHACRYLATE	FORMULA X---MIXTURE
MANUFACTURERS NAME: DYNA SYSTEMS A PARTSMaster CO DIV OF NCH	
ADDRESS (NUMBER, STREET, CITY, STATE & ZIP CODE) P.O. BOX 655326 DALLAS, TEXAS 75265-5326	
PREPARED BY: RICHARD STOLLEY/T.S.CHEM.	PRODUCT CODE NUMBER 67004910
EMERGENCY TELEPHONE NUMBER 214-438-1381	

SECTION II- HAZARDOUS INGREDIENTS

THE HAZARDS PRESENTED BELOW ARE THOSE OF THE INDIVIDUAL COMPONENTS AS THE PRODUCT MIXTURE HAS NOT BEEN TESTED AS A WHOLE.

CHEMICAL NAME (INGREDIENTS)	HAZARD	TLV*	PEL*	CAS#
POLY METHYL METHACRYLATE	IRRITANT	N/A	N/A	9011-14-7
ETHYL CYANOACRYLATE	SKIN IRR.	2 PPM	N/A	7085-85-0

SECTION III - PHYSICAL DATA

BOILING PT. (FAHRENHEIT)	>300 F.	SPEC GRAVITY (H2O=1)	1.050
VAPOR PRESSURE (MM HG)	<0.2	COLOR	CLEAR LIQUID

INSTANT ADHESIVE

(CONTINUED) SECTION III - PHYSICAL DATA PAGE : 02

VAPOR DENSITY (AIR=1)	3	ODOR	SHARP IRRITATING
PH @ 100%	N/A	CLARITY	TRANSPARENT
PERCENT VOLATILE BY VOLUME (%)	N/A	EVAPORATION RATE (BU AC = 1)	0.10
SOLUBILITY IN WATER	NEGLECTIBLE		
VISCOSITY	SEMI-VISCOUS		

SECTION IV - FIRE AND EXPLOSION HAZARD

FLASH POINT (METHOD USED)	>200 F. T.C.C.	FLAMMABLE LIMITS	N/A	LEL	UEL
EXTINGUISHING MEDIA	"ALCOHOL" X---FOAM	X---CO2	DRY X---CHEMICAL	WATER X---SPRAY	---OTHER
SPECIAL FIRE FIGHTING PROCEDURES N/A					

UNUSUAL FIRE & EXPLOSION HAZARDS
N/A

NFPA HAZARD RATING (0=INSIGNIFICANT; 1=SLIGHT; 2=MODERATE; 3=HIGH; 4=EXTREME):
 3 ---HEALTH 1 ---FLAMMABILITY 0 ---REACTIVITY ---SPECIAL

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE :
 2PPM ESTIMATED 1.
 EFFECTS OF OVEREXPOSURE
 SKIN IRRITATION, DERMATITIS AND ADHESION. (SHORT TERM EXPOSURE)
 IF INTRODUCED INTO THE EYES, WEeping WILL OCCUR AND POSSIBLE DOUBLE VISION.
 A LARGE DROP MAY CAUSE THERMAL BURNS.
 SKIN IRRITATION DERMATITIS AND ADHESION LEADING ITSELF TO LOSS OF SKIN TISSUE. (LONG TERM EXPOSURE)

CERRO COPPER PRODUCTS COMPANY
 MSDS NUMBER - CCPC-00-0513

APPROVALS:
 ENVIRONMENTAL HEALTH & SAFETY

PRIMARY ROUTE OF ENTRY: <-- INHALATION <-- INGESTION <-- ABSORPTION

EMERGENCY & FIRST AID PROCEDURES

INHALATION :
SEEK FRESH AIR. OBTAIN MEDICAL ATTENTION.

EYE CONTACT:
EYELID TO EYEBALL ADHESION: WASH THOROUGHLY WITH WARM WATER AND APPLY GAUZE PATCH. EYE WILL OPEN IN 4 DAYS. DO NOT OPEN EYES BY MANIPULATION. ADHESIVE ON EYEBALL WILL ATTACH TO PROTEIN AND WILL DISASSOCIATE OVER A PERIOD OF SEVERAL HOURS. WILL CAUSE WEeping AND DOUBLE VISION. THE PRECEDING IS TRUE EVEN WITH GROSS CONTAMINATION.

SKIN CONTACT:
SKIN ADHESION: IMMERSE BONDED SURFACE IN WARM SOAPY WATER. PEEL AND ROLL SURFACE WITH BLUNT EDGE. THEN REMOVE ADHESION WITH SOAP AND WATER.

INGESTION :
DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. SEEK MEDICAL ATTENTION. IF LIPS ARE STUCK TOGETHER, APPLY WARM WATER ENCOURAGE MAXIMUM WETTING AND PRESSURE FROM SALIVA INSIDE THE MOUTH. PEEL OR ROLL LIPS APART. DO NOT TRY AND PULL THE LIPS WITH DIRECT OPPOSING ACTION. IT IS ALMOST IMPOSSIBLE TO SWALLOW PRODUCT AS IT HARDENS IN THE MOUTH.

NOTES TO PHYSICIAN :
IT SHOULD NEVER BE NECESSARY TO USE SUCH DRASTIC MEASURE SUCH AS SURGERY TO SEPARATE ACCIDENTLY BONDED SKIN.

SECTION VI - TOXICITY INFORMATION

PRODUCT CONTAINS CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN BY:

IARC	<--YES	NTP	<--YES	OSHA	<--YES	ACGIH	<--YES	OTHER	<--YES
	X<--NO		X<--NO		X<--NO		X<--NO		X<--NO

POLY (METHYL METHACRYLATE) HAS BEEN SHOWN TO CAUSE TUMORS IN EXPERIMENTAL ANIMALS WHEN IMPLANTED BENEATH THE SKIN. IN LIGHT OF THE LOW CONCENTRATION OF THIS COMPONENT IN THE PRODUCT, IT IS OUR BEST TECHNICAL JUDGEMENT THAT NORMAL USE OF THIS PRODUCT POSES NO SUCH HAZARDS.

THIS WARNING IS PRESENT ONLY TO COMPLY WITH OSHA REGULATIONS.

DRL-RAT LD50: > 5000MG/KG
SKN-RBT LD50: > 2000MG/KG

SECTION VII - REACTIVITY DATA

STABILITY	X<--STABLE	<--UNSTABLE	CONDITIONS TO AVOID
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N/A

INSTANT ADHESIVE

(CONTINUED)

SECTION VII - REACTIVITY DATA

PAGE : 04

INCOMPATIBILITY (MATERIALS TO AVOID)

WATER, ALCOHOLS, AMINES, ALKALINES.

HAZARDOUS DECOMPOSITION PRODUCTS

CYANIDES

HAZARDOUS	X	WILL NOT OCCUR	MAY OCCUR	CONDITIONS TO AVOID
-----------	---	----------------	-----------	---------------------

POLYMERIZATION

N/A

SECTION VIII - SPILL OR LEAK PROCEDURES

STEPS TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED
FLOOD WITH WATER TO POLYMERIZE. SOAK UP WITH INERT ABSORBANT.

WASTE DISPOSAL METHOD
LANDFILL OR INCINERATE IN ACCORDANCE WITH EPA AND LOCAL REGULATIONS.

NEUTRALIZING AGENT

N/A

SECTION IX - SPECIAL PROTECTION INFORMATION

REQUIRED VENTILATION
GENERAL EXHAUST IS USUALLY ADEQUATE.

RESPIRATORY PROTECTION
LOCAL VENTILATION IS ADEQUATE.

PROTECTIVE GLOVES
POLYETHYLENE GLOVES

EYE PROTECTION
SAFETY GLASSES OR GOGGLES ARE MANDATORY.

OTHER PROTECTION
N/A

INSTANT ADHESIVE

SECTION X - STORAGE AND HANDLING INFORMATION : 05

STORAGE TEMPERATURE
110 F. <--MAX 40 F. <--MIN INDOOR HEATED REFRIGERATED OUTDOOR
X
PRECAUTIONS TO BE TAKEN IN HANDLING & STORING
STORE BELOW 75 F. FOR MAXIMUM SHELF LIFE.
OTHER PRECAUTIONS
KEEP OUT OF REACH OF CHILDREN.
READ ENTIRE LABEL BEFORE USING PRODUCT.

SECTION XI - REGULATORY INFORMATION

CHEMICAL NAME C.A.S. NUMBER UPPER % LIMIT

N/A

THOSE INGREDIENTS LISTED ABOVE ARE SUBJECT TO THE REPORTING REQUIREMENTS OF
313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF
1986 AND 40 CFR PART 372.
IF UE (USE EXEMPTION) APPEARS UNDER UPPER % LIMIT, END USERS ARE EXEMPT
FROM NOTIFICATION BECAUSE THE PRODUCT IS USED AND LABELED FOR ROUTINE
JANITORIAL WORK, OR THE PRODUCT IS USED AND LABELED FOR FACILITY GROUNDS
MAINTENANCE (SUCH AS FERTILIZERS AND HERBICIDES), OR THE PRODUCT IS USED AND
LABELED FOR MAINTAINING MOTOR VEHICLES.

SECTION XII - TRANSPORTATION * (FOR FUTURE USE)

APPLICABLE REGULATIONS
<--49 CFR <--IMCO <--TARIFF 6 D <--IATA <--MILITARY AIR (AFR 71-4)

SHIPPING NAME

HAZARD CLASS ID NUMBER REPORT QTY

LABELS LIMITED QTY

UNIT CONTAINER

DOT SPS CONTAINER NET EXPLOSIVE WT.

AEROSOL PROPELLANT(S)

INSTANT ADHESIVE

SECTION XIII - REFERENCES

PAGE : 06

1. VENDOR'S MSDS.

THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED
ACCURATE IN LIGHT OF CURRENT FORMULATION. HOWEVER, NO WARRANTY
IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THIS DATA
OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.

DYNA SYSTEMS A PARTSMASTER CO DIV OF NCH ASSUMES NO RESPONSIBILITY
FOR PERSONAL INJURY OR PROPERTY DAMAGE CAUSED BY THE USE, STORAGE
OR DISPOSAL OF THE PRODUCT IN A MANNER NOT RECOMMENDED ON THE
PRODUCT LABEL. USERS ASSUME ALL RISKS ASSOCIATED WITH SUCH
UNRECOMMENDED USE, STORAGE, OR DISPOSAL OF THE PRODUCT.

Occupational Safety and Health Administration
(Non-Mandatory Form)
Form Approved
OMB No. 1218-0072



Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.

Manufacturer's Name Elam Chemical Company, Inc.	Emergency Telephone Number (314) 938-4588
Address (Number, Street, City, State, and ZIP Code) P. O. Box 360, Eureka, MO 63025-0360	Telephone Number for Information (314) 938-4588
	Date Prepared 06/01/89
	Signature of Preparer (optional)

[illegible]

Boiling Point	212	Specific Gravity (H ₂ O = 1)	N/A
Vapor Pressure (mm Hg)	N/A	Melting Point	N/A
Vapor Density (Air = 1)	N/A	Evaporation Rate (Butyl Acetate = 1)	N/A
Solubility in Water			

Flash Point (Method Used)	None	Flammable Limits	None	LEL	N/A	UEL	N/A
Extinguishing Media	None						
Special Fire Fighting Procedures	None						

None

Section V — Reactivity Data

Stability XX	Unstable		Conditions to Avoid	None
	Stable	X		

Incompatibility (Materials to Avoid) None

Hazardous Decomposition or Byproducts

None

Hazardous Polymerization	May Occur		Conditions to Avoid	None
	Will Not Occur	X		

Section VI — Health Hazard Data

Route(s) of Entry:	Inhalation?	Skin?	Ingestion?
	No	Yes	Yes
Health Hazards (Acute and Chronic)	None		

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
	None	None	No

Signs and Symptoms of Exposure Causes defatting of skin if not flushed off with water.

Medical Conditions
Generally Aggravated by Exposure

Emergency and First Aid Procedures

Section VII — Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

Mop up - flush down drain

Waste Disposal Method Normal - Nearest drain

Precautions to Be Taken in Handling and Storing Store in cool place

Other Precautions None

Section VIII — Control Measures

Respiratory Protection (Specify Type) None

Ventilation	Local Exhaust	OK	Special	NO
	Mechanical (General)	OK	Other	NO

Protective Gloves Suggested Eye Protection Suggested

Other Protective Clothing or Equipment None

Work/Hygienic Practices Normal

CERRA CORP. ASSOCIATES COMPANY
MADE IN U.S.A. - CERRA-CO-0115
EQUIPMENT -
DATE -
ENGELHARD

Code: J96400
Date: 09-29-89

MATERIAL SAFETY DATA SHEET

Product: SUPER FILTROL GRADE 1

SECTION I SUPPLIER INFORMATION

Common Name : BENTONITE ACID-LEACHED POWDER
Chemical Name : BENTONITE ACID-LEACHED POWDER
Formula : CHEMICAL MIXTURE
Product CAS # : 70131-50-9
Supplier : ENGELHARD CORPORATION, PIGMENTS AND ADDITIVES DIVISION,
SPECIALTY MINERALS AND COLORS GROUP
Address : 29001 SOLON ROAD
City, St, Zip : SOLON, OH 44139
Phone : 216-292-9200

EMERGENCY PHONE #: 216-292-9200

SECTION II HAZARDOUS INGREDIENT INFORMATION

INGREDIENT	% Wt.	PEL-OSHA	TLV-ACGIH
ALUMINUM SILICATE CAS #: 1332-58-7	97	None established	10 mg/m ³ , Total dust
SILICA, CRYSTALLINE (QUARTZ) CAS #: 14808-60-7	1-3	0.1 mg/m ³ , Respirable	0.1 mg/m ³ , Respirable

INGREDIENT HAZARD STATEMENT

SUSPECT CANCER HAZARD - Risk of cancer depends on duration and level of exposure.

Prolonged or repeated inhalation may cause lung damage.

May cause eye and respiratory tract irritation.

Unless otherwise noted, all values are reported as 8-hour Time-Weighted Averages (TWAs) and total dust (particulates only). All ACGIH TLVs refer to the 1988-89 Standards. All OSHA PELs refer to 29 CFR Part 1910 Air Contaminants: Final Rule, January 19, 1989.

SECTION III PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point: Not applicable
Specific Gravity (H₂O=1): 2.0
Melting Point: Not applicable

Vapor Pressure (mm Hg): Not applicable
Vapor Density (Air=1): Not applicable
Evaporation Rate (Butyl Acetate=1): Not applicable
% Solubility/Water: Negligible

APPEARANCE AND ODOR

Light grey to off-white powder; odorless

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not available
Auto-Ignition: Not available
LEL: Not available
UEL: Not available

NFPA HAZARD CLASSIFICATION

Health: 0 Flammable: 0 Reactivity: 0

HMIS HAZARD CLASSIFICATION

Health: 0* Flammable: 0 Reactivity: 0

EXTINGUISHING MEDIA

Use water, carbon dioxide or foam.

SPECIAL FIRE FIGHTING PROCEDURES

None expected.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Not a fire or explosion hazard.

SECTION V REACTIVITY DATA

Stability: Generally considered stable.
Avoid: None expected.

INCOMPATIBILITY (Materials to Avoid)

None expected.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS

None expected.

Polymerization: Polymerization is not expected to occur.
Avoid: Not applicable.

SECTION VI	HEALTH HAZARD DATA
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ROUTES OF ENTRY

Eyes? YES Skin? NO Inhalation? YES Ingestion? NO

EFFECTS OF OVEREXPOSURE

EYE CONTACT may cause mechanical irritation if exposed to large amounts of dust.

SKIN CONTACT: No adverse effects expected.

INHALATION may cause irritation to respiratory tract and lung damage if exposure is repeated or prolonged.

INGESTION: No adverse effects expected.

CARCINOGENICITY

NTP? NO

IARC? YES

OSHA? NO

CRYSTALLINE SILICA is listed by the International Agency for Research on Cancer (IARC) as a 2A: Sufficient evidence in laboratory animals and limited evidence of carcinogenicity in humans.

CHRONIC HEALTH HAZARDS

Refer to Effects of Overexposure and Carcinogenicity.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

None known.

EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Flush eyes with plenty of water. If irritation develops, call a physician.

SKIN CONTACT: Procedures normally not needed. If skin contact occurs flush with plenty of water. If irritation develops, call a physician.

INHALATION: Remove to fresh air.

INGESTION: Procedures normally not needed. If large quantities are ingested, seek medical advice.

SECTION VII PRECAUTIONS FOR SAFE HANDLING AND USE

EPA Waste #: Not regulated
UN #: Not applicable
DOT Classification: Not regulated

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Contain spillage and scoop up or vacuum. Avoid dusting.

WASTE DISPOSAL METHOD

Federal, state and local disposal laws and regulations will determine the proper waste disposal procedure.

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Product becomes slippery when wet.

PERSONNEL SAMPLING PROCEDURE

For CRYSTALLINE SILICA: Refer to NIOSH Manual of Analytical Methods, 3RD Edition, Volume 2, Methods 7500, 7601 and 7602.

SECTION VIII CONTROL MEASURES**RESPIRATORY PROTECTION**

A NIOSH/MSHA-approved respirator as necessary.

VENTILATION

General; local exhaust ventilation as necessary to control any air contaminants, to within their TLVs, in the use of this product.

PROTECTIVE EQUIPMENT

Safety glasses (with side shields).

WORK/HYGIENE PRACTICES

Avoid breathing dust.
Avoid contact with eyes.
Use only with adequate ventilation.

SECTION IX FEDERAL AND STATE REGULATIONS**SARA HAZARD CATEGORIES**

IMMEDIATE (Acute) Health Hazard: NO
DELAYED (Chronic) Health Hazard: YES
FIRE Hazard: NO
REACTIVITY Hazard: NO
Sudden Release of PRESSURE: NO

SARA SECTION 313 NOTIFICATION

This product does not contain toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgement.

FEDERAL CARBIDE COMPANY

MATERIAL SAFETY DATA SHEET

100% COPPER PRODUCTS COMPANY
 MSDS NUMBER - COPC-00-001
 DATE OF REVISION: 1989
 REVISION: 1989

CHEMICAL NAME: Cemented Tungsten Carbide Product with Cobalt/Nickel Binder
TRADE NAME & SYNONYMS: All Federal Carbide Grades
CHEMICAL FAMILY: Refractory Metal Carbide
MOLECULAR WEIGHT: N/A
NFPA HAZARD RATING: Health 2; Flammability 0; Reactivity 0; Personal Protection 1

Issued: June 30, 1989
Supersedes: November 15, 1985

PHYSICAL DATA

Appearance and Odor: Dark Gray Metal/No Odor
Boiling Point: N/A **Specific Gravity (H₂O=1):** 5.4 to 15.5
Vapor Pressure: N/A **Percent Volatile by Volume:** 0
Vapor Density: N/A **Evaporation rate:** N/A
Solubility in Water: Insoluble **How Best Monitored:** Air Sample

HAZARDOUS INGREDIENTS

Material	(CAS #)	Percent By Weight	OSHA PEL	ACGIH TLV
Tungsten (limits for Tungsten dust)	(7440-33-7)	67-97% *	5 mg/m ³	5 mg/m ³
Cobalt	(7440-48-4)	3-30% *	0.05 mg/m ³	0.05 mg/m ³
Tantalum (limits for Tantalum dust)	(7440-25-7)	0.0-50% *	5 mg/m ³	5 mg/m ³
Chromium Carbide (limits for Chromium dust)	(7440-47-3)	0.0-5.1% *	0.5 mg/m ³	0.5 mg/m ³
Nickel	(7440-02-0)	1-15% *	1 mg/m ³	1 mg/m ³

*Depends on grade specifications

HEALTH HAZARD DATA

Note: During normal operation and usage, cemented carbide products do not present inhalation, ingestion, or other chemical hazards of any kind. However, operations such as grinding of such products may release dusts or vapors which may present health hazards if the exposure limits described are exceeded. The health hazards described below relate to these non-routine operations, as well as exposure to components of powder.

Routes of Exposure: Grinding cemented tungsten carbide product with Cobalt/Nickel binder may produce potentially hazardous dust which can be inhaled, swallowed or come in contact with the skin or eyes.

Effects of Overexposure:

Inhalation - Dust can cause irritation of the nose and throat. Some studies associate periodic inhalation of this respirable dust with the potential for transient respiratory reaction in Cobalt hypersensitized individuals and prolonged excessive inhalation of respirable dust or mist with transient, permanent or fatal respiratory disease. Adverse reactions are purportedly due to the Cobalt ingredient. Nickel is suspected of causing nasal and lung cancer.

HEALTH HAZARD DATA (CONTINUED)

- Skin Contact - Can cause irritation or transient allergic skin rash in Cobalt hypersensitized individuals.
- Eye Contact - Can cause mild pain or irritation.
- Ingestion - No current scientific studies indicate adverse effects from ingestion of small quantities of dust.
- Emergency and First Aid Procedures: Applicable for dusts or mists
- Inhalation - If symptoms of pulmonary involvement develop (coughing, wheezing, shortness of breath, etc.), remove exposure and seek medical attention.
- Skin Contact - If irritation or rash occurs, thoroughly wash affected area with soap and water and isolate from exposure. If irritation or rash persists, seek medical attention.

CARCINOGENIC ASSESSMENT (NTP ANNUAL REPORT, IARC MONOGRAPHS, OTHER):

Nickel has been identified as a suspected carcinogens by NTP, IARC, and OSHA

FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A Test Method Used:- Flammable Limits: N/A LEL:- UEL:-
Tungsten Carbide Grade Powder is not a fire hazard. Dusts may ignite if allowed to accumulate and subjected to an ignition source.

EXTINGUISHING MEDIA:

For powder fires use dry sand, dry dolomite, ABC type fire extinguisher, or flood with water.

SPECIAL FIRE FIGHTING PROCEDURES:

For a powder fire confined to a small area, use a respirator approved for toxic dusts and fumes. For a large fire, fire fighters should use self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Dusts may present a fire or explosion hazard under rare favoring conditions of particle size, dispersion and strong ignition source. However, this is not expected to be a problem under normal conditions.

REACTIVITY DATA

Stability:

Unstable
Stable X

Conditions to Avoid: N/A

Incompatibility:

Contact of dust with strong oxidizers may cause fire or explosions.

Materials to Avoid: Strong acids

REACTIVITY DATA (CONTINUED)

Hazardous Decomposition Products: None

Hazardous Polymerization:

Conditions To Avoid: N/A

May Occur
Will Occur

X

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

Ventilate area of spill. Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the PEL or TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator.

WASTE DISPOSAL METHOD:

Dispose of in accordance with appropriate government regulations. May be sold as scrap for reclaim.

SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

Use an appropriate NIOSH approved respirator if airborne dust concentrations exceed the appropriate PEL or TLV. All appropriate requirements set forth in 29 CFR 1910.134 should be met.

VENTILATION:

Use local exhaust ventilation which is adequate to limit personal exposure to airborne dust to levels which do not exceed the PEL or TLV. If such equipment is not available use respirators as specified above.

PROTECTIVE GLOVES:

Protective Gloves or Barrier Cream are recommended when contact with dust or mist is likely. Prior to applying the barrier cream or use of protective gloves, wash thoroughly.

EYE PROTECTION:

Safety glasses with side shields or goggles are recommended.

OTHER PROTECTIVE EQUIPMENT: N/A

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:

Maintain good housekeeping procedures to prevent dust accumulation. Avoid dust inhalation and direct skin contact with dust.

SPECIAL PRECAUTIONS (CONTINUED)

OTHER PRECAUTIONS:

Clean up using methods which avoid dust generation such as vacuum (with appropriate filter to prevent airborne dust levels which exceed the PEL or TLV), wet dust mop or wet clean-up. If airborne dust is generated, use an appropriate NIOSH approved respirator. Do not use coolant for wet clean up.

Wash hands thoroughly after handling, before eating or smoking. Wash exposed skin at the end of work shift. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming (with appropriate filters) the clothing, rags, or other items.

Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

USER'S RESPONSIBILITIES

This Material Safety Data Sheet provides information consistent with recommended applications of this product and anticipated non-routine activities involving the product. It is the user's responsibility to identify and protect against health and safety hazards presented by modification of cemented carbide products or powders after manufacture. Individuals handling cemented carbide products or powders should be informed of all relevant hazards and recommended safety precautions, and should have access to the information contained in this MSDS.

IN CASE OF QUESTIONS, PLEASE
CALL FEDERAL CARBIDE COMPANY'S
SAFETY DIRECTOR: 201-935-4630

FEDERAL CARBIDE COMPANY
66 GRAND STREET
P.O. BOX 228
MOONACHIE, NJ 07074

Although Federal Carbide has attempted to provide current and accurate information herein, Federal Carbide makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, injury of any kind which may result from or arise out of the use of or reliance on the information by any person.

MONSANTO PRODUCT NAME

ROUNDUP® HERBICIDEMONSANTO COMPANY
800 N. LINDBERGH BLVD.
ST. LOUIS, MO 63167Emergency Phone No.
(Call Collect)
314-894-4000

PRODUCT IDENTIFICATION

Synonyms: None.

Chemical Name: Not Applicable, Formulated Product

Active Ingredient: Isopropylamine salt of glyphosate..... 41.0%

Inert Ingredients: 59.0%

100.0%

*Contains 480 grams per liter or 4 pounds of the active ingredient Isopropylamine salt of N-(phosphonomethyl) glycine per U.S. gallon. Equivalent to 358 grams per liter or 3 pounds per U.S. gallon of the acid, glyphosate.

CAS Reg. No.: Not Applicable, Formulated Product

CAS Reg. No.
Active Ingredient: 38841-94-0

EPA Reg. No.: 524-308

DOT Proper Shipping
Name: Not ApplicableDOT Hazard Class/
LD. No.: Not Applicable

DOT Label: Not Applicable

Reportable Quantity (RQ)
Under Clean Water Act: Not ApplicableU.S. Surface Freight
Classification: Weed Killing Compound, N.O.I.B.N.

The substance listed below is identified as a hazardous chemical under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200):

Surfactant, about 15%. The specific chemical identity is withheld because it is trade secret information of Monsanto Company.

WARNING STATEMENTS

Keep out of reach of children.

WARNING!

CAUSES EYE IRRITATION

HARMFUL IF SWALLOWED

MAY CAUSE SKIN IRRITATION

NOT FOR REFORMULATION OR REPACKAGING

000000-000

6-4045 / 783

MATERIAL SAFETY DATA

PRECAUTIONARY MEASURES

Do not get in eyes, on skin or on clothing.

Wash thoroughly after handling.

Avoid direct applications to any body of water. Do not contaminate water by disposal of waste or cleaning of equipment.

EMERGENCY AND FIRST AID PROCEDURES

FIRST AID: IF IN EYES, immediately flush with plenty of water for at least 15 minutes. Call a physician.

IF ON SKIN, immediately flush with plenty of water. Remove contaminated clothing. Wash clothing before reuse.

IF SWALLOWED, this product will cause gastrointestinal tract irritation. Immediately dilute by swallowing water or milk. Call a physician.

OCCUPATIONAL CONTROL PROCEDURES

Eye Protection: Wear chemical splash goggles during mixing/pouring operations or other activities in which eye contact with undiluted Roundup® herbicide is likely to occur.

Skin Protection: In cases in which prolonged or repeated skin contact with Roundup herbicide may occur, long-sleeved shirt, long pants, and chemical protective (e.g. rubber) gloves are recommended. Wash hands and contaminated skin after handling. Clothing soaked with Roundup solution should be promptly removed and laundered before reuse.

Respiratory Protection: Respiratory protection should not be required for normal use and handling. During periods of abnormal exposure to heavy spray or mist, use of NIOSH/MSHA approved equipment for pesticide vapor/mist is recommended. The respirator use limitations specified by NIOSH/MSHA or the manufacturer must be observed.

Ventilation: No special precautions are recommended.

Airborne Exposure Limits: Product: Roundup Herbicide - 100% by wt.

OSHA PEL: None established
ACGIH TLV: None established

Surfactant Ingredient: Approx. 15% by wt.

OSHA PEL: None established
ACGIH TLV: None established

FIRE PROTECTION INFORMATION

Flash Point: >200°F. **Method:** Tag Closed Cup

Extinguishing Media: Water spray, foam, dry chemical or CO₂ or any Class B extinguishing agent.

Special Firefighting Procedures: Firefighters and others who may be exposed to vapors or products of combustion should wear a self-contained breathing apparatus and full protective clothing. Equipment should be thoroughly cleaned after use.

Unusual Fire and Explosion Hazards: None.

MATERIAL SAFETY DATA Roundup® Herbicide

Monsanto MATERIAL SAFETY DATA

Page 3 of 6

REACTIVITY DATA

Stability:

Stable for at least 5 years under normal conditions of warehouse storage. Heated facilities are not required.

Incompatibility:

This product and spray solutions of the product should be mixed, stored and applied only in stainless steel, aluminum, fiberglass, plastic and plastic lined containers.

DO NOT MIX, STORE OR APPLY THIS PRODUCT OR SPRAY SOLUTIONS OF THIS PRODUCT IN GALVANIZED OR UNPAINTED STEEL (EXCEPT STAINLESS STEEL) CONTAINERS OR SPRAY TANKS. This product or spray solutions of the product react with such containers and tanks to produce hydrogen gas which may form a highly combustible gas mixture. This gas mixture could leak or explode, causing serious personal injury. It is ignited by open flame, spark, welder's torch, lit cigarette or other ignition source.

Hazardous Decomposition

None.

Hazardous Polymerization:

Does not occur. The product can react with caustic (basic) materials to liberate heat. This is not a polymerization but rather a chemical neutralization in an acid-base reaction.

HEALTH EFFECTS SUMMARY

The following information presents both human experience and the results of scientific experiments used by qualified experts to assess the effects of Roundup herbicide on the health of exposed individuals and to support the Precautionary Statements and Occupational Control Procedures recommended in the document. To avoid misunderstanding, the data provided in this section should be interpreted by individuals trained in evaluation of this type of information.

Human Experience

Dermal contact and inhalation are expected to be the primary routes of occupational exposure to Roundup herbicide. Direct contact with the material may cause temporary eye irritation and conjunctivitis. Prolonged contact with Roundup herbicide may cause dermal irritation. Ingestion of Roundup herbicide has been reported to produce gastrointestinal discomfort, nausea, vomiting and diarrhea.

Toxicological Data

Data from Monsanto studies indicate the following:

Oral LD₅₀ (Rat): 5,400 mg/kg, Practically Nontoxic
Dermal LD₅₀ (Rabbit): >5,000 mg/kg, Practically Nontoxic
Eye Irritation (Rabbit, 24-hr): (FHSIA) Score = 4.1 on a scale of 110.0, Slightly Irritating
Skin Irritation (Rabbit, 24-hr): (FHSIA) Score = 4.3 on a scale of 8.0, Moderately Irritating
DOT Skin Irritation (Rabbit, 4-hr): Not Corrosive
Inhalation LC₅₀ (Rat, 4-hr): 3.16 mg/l (analytical concentration), Slightly Toxic
Patch testing of 50 human volunteers with Roundup herbicide at use concentrations and 5X use concentrations produced no positive reactions following initial application, any of 15 repeated applications in the induction phase, or on subsequent challenge 2 weeks later. Roundup herbicide is not considered a primary irritant or a sensitizing agent.

Patch testing of guinea pigs with Roundup herbicide produced essentially no irritation following initial application, mild to moderate erythema (redness), edema (swelling) and/or mild necrosis (tissue damage) were observed in some animals during subsequent repeated exposures in the induction phase. On challenge, no dermal response was observed in any of the animals. Roundup herbicide is not considered a dermal sensitizing agent in guinea pigs.

(Please Refer Summary Continued On Next Page)

Monsanto MATERIAL SAFETY DATA

Page 4 of 6

HEALTH EFFECTS SUMMARY (Continued)

Single male and female dogs were orally administered Roundup herbicide or a 2 percent aqueous solution of Roundup herbicide at dosages ranging from 0.3125 to 5.0 mg/kg. No mortality and no irritation of plasma acetylcholinesterase activity were reported. The most common effects observed were vomiting and diarrhea, which occurred shortly after dosing.

A series of 21-day dermal toxicity studies have been conducted in which Roundup herbicide was applied to the skin of male rabbits 6 hours per day, 5 days per week at various concentrations. At 5 times the intended use concentration, severe dermal irritation and systemic toxicity (moribund, reduced food consumption, body weight loss, and testicular effects) were observed. Rabbits treated with 3 times the intended use concentration and below, or only with the active ingredient glyphosate, exhibited only signs to moderate local irritation and had no signs of systemic effects. When the surfactant in Roundup formulation was tested, marked irritation and systemic effects were observed which were similar to those seen with the higher concentration of Roundup. Effects observed in these studies are considered to be a secondary response to the stress of severe dermal irritation, to which rabbits are particularly sensitive, rather than the result of direct systemic toxicity.

Rats were exposed by inhalation to aerosol concentrations of 0.05, 0.16 and 0.36 mg of a 33.3% Roundup solution per liter at 6 hours/day, 5 days/week for a total of 22 exposures over a 4 week period. Minor nasal irritation was observed in female animals. No adverse hematologic, biochemical or systemic histopathologic effects were noted. The systemic no-effect level was considered to be 0.36 mg of a 33.3% Roundup solution per liter of air.

Following a 24-hr topical application of Roundup herbicide to the abdomen of rhesus monkeys, approximately 1.6 percent of the administered dose of the active ingredient (glyphosate) was systemically absorbed. Excretion in the urine was the major route of elimination following systemic absorption.

Components

Data from Monsanto studies and from the scientific literature on the components of Roundup herbicide is discussed below:

Isopropylamine Salt of Glyphosate (MON 0139)

The isopropylamine salt of glyphosate (MON 0139) has been tested in acute and subchronic toxicity studies. For additional toxicity information on this material, please refer to the MON 0139 Material Safety Data Sheet.

Surfactant

The surfactant properties of the material are considered to contribute to the eye and skin irritation potential of Roundup herbicide.

PHYSICAL DATA

Appearance: Clear, viscous amber-colored solution.

Odor: Practically odorless to slight amine-like odor.

pH: 4.4 - 4.9

Specific Gravity (Water = 1): 1.17

MATERIAL SAFETY DATA Roundup® Herbicide

Monsanto MATERIAL SAFETY DATA SPILL, AK & DISPOSAL INFORMATION

Page 5 of 6

Spills/Leak:

Observe all protective and safety precautions including use of rubber boots or rubber overshoes when cleaning up spills — See Occupational Control Procedures.

Liquid spills on floor or other impervious surfaces should be contained or diked, and should be absorbed with absorbent, bentonite or other absorbent dyes (Jilly Litter, etc.) Collect contaminated absorbent, place in plastic lined drum and dispose of in accordance with instructions provided under DISPOSAL. Thoroughly scrub floor or other impervious surfaces with a strong industrial type detergent solution and rinse with water.

Liquid spills that soak into the ground should be dug-up, placed in plastic lined metal drums and disposed of in accordance with instructions provided under DISPOSAL.

Leaking containers should be separated from non-leakers and either the container or its contents transferred to a plastic lined drum or other non-leaking container and disposed of in accordance with instructions provided under DISPOSAL. Any recovered spilled liquid should be similarly collected and disposed of.

Do not contaminate water, foodstuffs, seed or feed by storage and disposal.

Disposal:

Materials resulting from the use of this product should be used according to label instructions if possible. Wastes that cannot be used or chemically reprocessed should be disposed of in a landfill approved for pesticide disposal or buried on site in a safe place so that it will not contaminate water supplies. All disposal should be in accordance with applicable Federal, State or local procedures.

Empty container retains vapor and product residue. Observe all labeled safeguards until container is cleaned, repackaged or destroyed. DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.

Waste Drums and Cans: Triple rinse container. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

Pesticide Containers:

Do not reuse container. Triple rinse container then puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities. Plastic may be burned or incinerated if permissible under state and local rules. If burned, stay out of smoke.

Refill:

Triple rinse emptied bulk containers. Then offer for recycling or reconditioning or disposal in a manner approved by state and local authorities.

ADDITIONAL COMMENTS

Endangered Species Information:

Oral LD ₅₀ Goat:	4,960 mg/kg, Slightly Toxic
48-hr LD ₅₀ Honeydew:	>100 µg/bee, Practically Nontoxic
48-hr EC ₅₀ Daphnia magna (With Aeration):	37 mg/L, Slightly Toxic
48-hr EC ₅₀ Daphnia magna (Without Aeration):	24 mg/L, Slightly Toxic
48-hr EC ₅₀ Gammarus pseudomaneus:	42 mg/L, Slightly Toxic
96-hr TL ₅₀ Carp:	18.7 ppm, Slightly Toxic
96-hr LC ₅₀ Bluegill sunfish (Static):	14 mg/L, Slightly Toxic

(Additional Comments Continued On Next Page)

Monsanto MATERIAL SAFETY DATA ADDITIONAL COMMENTS (Continued)

96-hr LC ₅₀ Bluegill sunfish (Flow-Through):	5.8 mg/L, Moderately Toxic
96-hr LC ₅₀ Rainbow trout (Static):	22 mg/L, Slightly Toxic
96-hr LC ₅₀ Rainbow trout (Flow-Through):	8.2 mg/L, Moderately Toxic
96-hr LC ₅₀ Channel catfish:	16 mg/L, Slightly Toxic
96-hr LC ₅₀ Fathead Minnow:	9.4 mg/L, Moderately Toxic
96-hr LC ₅₀ Crayfish:	>1,000 ppm, Practically Nontoxic

Carp contained in a static pond were unaffected at any time during a 90-day observation period following exposure by aerial application of Roundup herbicide at the normal use concentration. Tissue residue analyses indicated that glyphosate, the active ingredient in Roundup herbicide, will not bioaccumulate.

Immersion of chicken eggs at four different embryo ages (0, 6, 12 and 18 days) for about five seconds in 1 or 5% v/vol Roundup in water solutions was reported to have no adverse effects on the hatchability or time to hatch of the eggs.

DATE: November, 1985

SUPERSEDES: March, 1982

MSDS NO.: M00007588

FOR ADDITIONAL NON-EMERGENCY INFORMATION, CALL: 314-694-4000

MATERIAL SAFETY DATA Roundup® Herbicide

Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Monsanto Company makes no representations as to the completeness or accuracy of the information supplied upon the condition that the person receiving same will make their own determination as to the use of the information herein. In no event shall Monsanto Company be liable for any damages, including consequential damages, arising from the use of or reliance upon the information herein. NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OF ANY OTHER NATURE ARE MADE HEREUNDER WITH RESPECT TO INFORMATION OR THE PRODUCT TO WHICH INFORMATION REFERS.

ROUNDUP is a registered trademark of Monsanto Company.



MATERIAL SAFETY DATA SHEET

DEPAC COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-02-038C
APPROVAL:
ENVIRONMENTAL: _____
SAFETY: _____
SUPERVISING: _____

IDENTITY (As Used on Label and List)

NO. 204 SUSPENSION

Section I

Manufacturer's Name

SUPERIOR GRAPHITE CO.

Emergency Telephone Number

NIGHT (312) 349-7692

Address (Number, Street, City, and ZIP Code)

120 SOUTH RIVERSIDE PLAZA

Telephone Number for Information

DAY (312) 559-2999

CHICAGO, IL 60606

Date Prepared

3/1/88

Signature of Preparer (optional)

Ronald B. Vayle

Section II - Hazardous Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
PURIFIED NATURAL GRAPHITE C.A.S. #7782-42-5	5 mg/m ³	5 mg/m ³	NONE	PROP.
PETROLEUM HYDROCARBONS # UNK.	UNK.	UNK.	UNK.	PROP.

Section III - Physical/Chemical Characteristics

Boiling Point	212° F	Specific Gravity (H ₂ O = 1)	UNK.
Vapor Pressure (mm Hg.)	NONE	Melting Point	NONE
Vapor Density (AIR = 1)	NONE	Evaporation Rate (Butyl Acetate = 1)	NONE

Solubility in Water

NEGLIGIBLE

Appearance and Odor

BLACK LIQUID - OIL SMELL

Section IV - Fire and Explosion Hazard Data

Flash Point (Method Used)	NONE	Flammable Limits	LEL NONE	UEL NONE
---------------------------	------	------------------	----------	----------

Extinguishing Media

WATER -- CO₂ -- FOAM -- REMOVE OXYGEN SOURCE

Special Fire Fighting Procedures

CUT OFF OXYGEN SUPPLY

Unusual Fire and Explosion Hazards

NONE

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	XX	

STRONG OXIDIZERS

Incompatibility (Materials to Avoid)

STRONG OXIDIZERS

Hazardous Decomposition or Byproducts

NONE

Hazardous Polymerization

May Occur

Conditions to Avoid

Will Not Occur

XX

STRONG OXIDIZERS BURNING MAY PRODUCE CARBON MONOXIDE

Section VI - Health Hazard Data

Route(s) of Entry: Inhalation?

REMOVE TO FRESH AIR

Skin?

WASH WITH SOAP & WATER

Ingestion?

DRINK WARM MILK/WATER CALL A DOCTOR

Health Hazards (Acute and Chronic)

UNK.

Carcinogenicity:

NO

NTP?

NO

IARC Monographs?

NO

OSHA Regulated?

NO

Signs and Symptoms of Exposure

POSSIBLY ALLERGENIC

Medical Conditions

Generally Aggravated by Exposure

MINOR IRRITATION TO EYES, NASAL PASSAGES

Emergency and First Aid Procedures

FOR DUST/VAPORS-REMOVE FROM THE AREA

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled

USE ABSORBENT MATERIAL -SWEEP UP

Waste Disposal Method

DISPOSE OF IN ACCORDANCE TO LOCAL, STATE & FEDERAL REGULATIONS

Precautions to Be Taken in Handling and Storing

NONE

Other Precautions

NONE

Section VIII - Control Measures

Respiratory Protection (Specify Type)

USE OSHA APPROVED DUST MIST MASKS

Ventilation

Local Exhaust

USE AMBIENT AMT. OF AIR

Special

NONE

Mechanical (General)

AS ABOVE

Other

NONE

Protective Gloves

WEAR RUBBER GLOVES

Eye Protection

WEAR GOGGLES

Other Protective Clothing or Equipment

USE OLD WORK CLOTHES

Work/Hygienic Practices

USE IN WELL VENTILATED AREA

SUPERIOR GRAPHITE • 120 S. Riverside Plaza, Chicago, Illinois 60606 • (312) 559-2999



MATERIAL SAFETY DATA SHEET

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE PRODUCTS

AND SAFE HANDLING AND DISPOSAL INFORMATION PAGE 1 OF 3
DATE : 07/09/89 ZEP DYNA 143
SUPERSEDES: 06/15/88 PRODUCT NUMBER: 0366

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404
P.O. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 445-9226
ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER
TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY
BETWEEN 8:00A.M.-5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED
(EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS

** LIGHT ALIPHATIC NAPHTHA ** solvent naphtha
(petroleum), medium aliphatics; CAS# 64742-88-7;
RTECS# NONE

TLV (PPM)	EFFECTS (SEE REVERSE)	% IN PROD.
200	TOX IRR CBL	>90

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0367

APPROVALS:

ENVIRONMENTAL: _____ (PRIOR) _____
SAFETY: _____ (PRIOR) _____
PURCHASING: _____ (PRIOR) _____

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED
CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

OVER-EXPOSURE TO THE VAPORS FROM THIS PRODUCT MAY PRODUCE MUCOUS MEMBRANE IRR-
ITATION, PARTICULARLY OF THE EYE AND RESPIRATORY TRACT. OVER-EXPOSURE TO VAPORS
MAY ALSO PRODUCE MILD CENTRAL NERVOUS SYSTEM DEPRESSION CHARACTERIZED BY HEAD-
ACHE, DIZZINESS, NAUSEA, AND STUPOR, LEADING TO UNCONSCIOUSNESS IN EXTREME
CASES. INTRODUCTION OF SOLVENTS, AS IN ASPIRATION OF VOMITUS FLUID, MAY PRODUCE
CHEMICAL PNEUMONIA. EXISTING RESPIRATORY DISORDERS AND LUNG DISEASES MAY BE AG-
GRAVATED BY INHALATION OF VAPORS.



MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 2 OF 3

ZEP MANUFACTURING COMPANY
F T IN MAINTENANCE PRODUCTS

DATE : 07/09/89 ZEP DYNA 143
SUPERSEDES: 06/15/88 PRODUCT NUMBER: .0366

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

SKIN WHICH IS REPEATEDLY DEFATTED BY CONTACT WITH THIS PRODUCT MAY BE MORE SUSCEPTIBLE TO IRRITATION, INFECTION, OR DERMITITIS.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA

EST'D PEL/TLV: 200 PPM

PRIMARY ROUTES OF ENTRY: INH, SKIN.

HMIS CODES: HEALTH 2; FLAM. 2; REACT. 0; PERS. PROTECT. B ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THOROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A SKIN CREAM WITH LANOLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.

EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.

INHALE: MOVE EXPOSED PERSON TO FRESH AIR. IF IRRITATION PERSISTS, GET MEDICAL ATTENTION PROMPTLY.

INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.

EYE PROTECTION : WEAR TIGHT-FITTING SPLASH-PROOF SAFETY GLASSES ESPECIALLY IF CONTACT LENSES ARE WORN.

RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING MSA OR OSHA-APPROVED RESPIRATOR.

VENTILATION : VENTILATION SHOULD BE EQUIVALENT TO OUTDOORS. USE EXHAUST FANS AND OPEN WINDOWS IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

BOILING POINT (F) : 368F INIT.

SPECIFIC GRAVITY : .785

VAPOR PRESSURE(MMHG): <5

PERCENT VOLATILE BY VOLUME (%) : 100

VAPOR DENSITY(AIR=1): 5.3

EVAPORATION RATE(BUTYL ACETATE =1): 0.14

SOLUBILITY IN WATER : INSOLUBLE

PH(CONCENTRATE) : N/A

PH(USE DILUTION OF) : N/A

APPEARANCE AND ODOR : A CLEAR, WATER-WHITE LIQUID WITH A MILD ODOR.

SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(F) (METHOD USED): 143F (TCC)

FLAMMABLE LIMITS LEL 1% UEL 7%

EXTINGUISHING MEDIA : WATER FOG, CO2, FOAM, DRY CHEMICAL

SPECIAL FIRE FIGHTING: SELF-CONTAINED BREATHING APPARATUS

UNUSUAL FIRE HAZARDS : DIRECT WATER ONTO INTACT CONTAINERS TO PREVENT BURSTING.



MATERIAL SAFETY DATA SHEET

AND SAFE HANDLING AND DISPOSAL INFORMATION

PAGE 3 OF 3

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE PRODUCTS

DATE : 07/09/89 ZEP DYNA 143
SUPERSEDES: 06/15/88 PRODUCT NUMBER: 0366

SECTION VII - REACTIVITY DATA

STABILITY : STABLE
INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS
POLYMERIZATION : WILL NOT OCCUR.
HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, AND OTHER UNIDENTIFIED ORGANIC COMPOUNDS.

SECTION VIII - SPILL AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
IMMEDIATELY ELIMINATE ALL FLAME, IGNITION AND HIGH-HEAT SOURCES. ABSORB SPILL ON INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A CLEAN, D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

LIQUID WASTES ARE NOT PERMITTED IN LANDFILLS. PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. UNUSABLE LIQUID MAY BE ABSORBED ON AN INERT ABSORBENT (e.g. ZEP-O-ZORB), DRUMMED AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. PRE-TREATMENT MAY BE REQUIRED BEFORE LANDFILLING. CONSULT LOCAL, STATE, OR FEDERAL AGENCIES FOR PROPER DISPOSAL IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:
COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF IGNITION.
POST "NO SMOKING" SIGNS ACCORDING TO LOCAL REGULATIONS FOR COMBUSTIBLE LIQUIDS.
KEEP PRODUCT AWAY FROM SKIN AND EYES.
DO NOT BREATHE SPRAY MISTS OR VAPORS.
CLOTHING OR SHOES WHICH BECOME CONTAMINATED WITH SUBSTANCE SHOULD BE REMOVED PROMPTLY AND NOT REWORN UNTIL THOROUGHLY CLEANED.
STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F.
KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - TRANSPORTATION DATA

DOT PROPER SHIPPING NAME

NONE

DOT HAZARD CLASS: N/A

DOT I. D. NUMBER : N/A

DOT LABEL/PLACARD: NONE

EM. TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): N/A



MATERIAL SAFETY DATA SHEET

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE PRODUCTS

AND SAFE HANDLING AND DISPOSAL INFORMATION PAGE 1 OF 3
DATE : 07/09/89 ZEP HI FOAM DEGREASER
SUPERSEDES: 04/21/89 PRODUCT NUMBER: 0358

SECTION I - EMERGENCY CONTACTS

ZEP MANUFACTURING COMPANY NON-OFFICE HOURS, WEEKENDS, AND HOLIDAYS: AREA CODE 404
P.O. BOX 2015 435-2973, 996-0899, 252-1587, 351-2952, 445-9226
ATLANTA, GEORGIA 30301 LOCAL POISON CONTROL CENTER
TELEPHONE (404)352-1680 TRANSPORTATION EMERGENCY
BETWEEN 8:00A.M. - 5:00P.M. CHEMTREC: TOLL FREE 1-800-424-9300 ALL CALLS RECORDED
(EASTERN TIME ZONE) DISTRICT OF COLUMBIA (202)483-7616 ALL CALLS RECORDED

SECTION II - HAZARDOUS INGREDIENTS

DESIGNATIONS	TLV (PPM)	EFFECTS (SEE REVERSE)	% IN PROD.
** HEAVY AROMATIC NAPHTHA ** solvent naphtha (petroleum), heavy aromatics; CAS# 64742-94-5; RTECS# NONE; Supplier TWA- 100 ppm; OSHA PEL-N/D.	N/D	IRR CBL	30-40
** KERDSENE ** techsene; fuel oil #1; coal oil; CAS# 8008-20-6; RTECS# OA5500000; OSHA PEL-N/D	500	IRR CBL	10-20
** POTASSIUM DODECYLBENZENE SULFONATE ** linear alkyl aryl sulfonate; CAS# 27177-77-1; RTECS# NONE OSHA PEL N/D	N/D	IRR	5-10
** TETRAPOTASSIUM PYROPHOSPHATE ** TKPP; diphosphoric acid, tetrapotassium salt; CAS# 7320-34-5; RTECS# NONE; OSHA PEL-N/D.	N/D	IRR	< 5
*** ETHYLENE GLYCOL MONOBUTYL ETHER ** 2-butoxyethanol; butyl cellosolve; CAS# 111-76-2; RTECS# KJ 75000; OSHA PEL (SKIN)- 25 ppm	25	TOX IRR CBL	< 5

CERRO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0358

APPROVALS:
ENVIRONMENTAL: _____
SAFETY: _____
PURCHASING: _____

@ IDENTIFIES CHEMICALS LISTED UNDER SARA-SECTION 313 FOR RELEASE REPORTING.

SPECIAL NOTE: ADVERSE HEALTH EFFECTS WOULD NOT BE EXPECTED UNDER RECOMMENDED CONDITIONS OF USE SO LONG AS PRESCRIBED SAFETY PRECAUTIONS ARE PRACTICED.

SECTION III - HEALTH HAZARD DATA

ACUTE EFFECTS OF OVEREXPOSURE:

EXPOSURE BY INHALATION MAY PRODUCE EYE, NOSE, AND THROAT IRRITATION. INHALATION OF HARMFUL AMOUNTS OF VAPOR MAY PRODUCE MILD CENTRAL NERVOUS SYSTEM DEPRESSION, CHARACTERIZED BY HEADACHE, NAUSEA, VERTIGO, AND STUPOR. INTRODUCTION OF HYDROCARBON INTO THE LUNGS, AS IN ASPIRATION OF VOMITUS FLUIDS, MAY PRODUCE CHEMICAL PNEUMONIA. EXISTING RESPIRATORY DISORDERS OR SKIN DISEASES MAY BE AGGRAVATED BY EXPOSURE.

PRODUCT IN CONCENTRATED FORM IS A SEVERE EYE IRRITANT. OVER-EXPOSURE MAY LEAD TO EYE TISSUE DAMAGE WHICH CAN BE PERMANENT. SKIN CONTACT MAY PRODUCE IRRITATION.

MATERIAL SAFETY DATA SHEET

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE PRODUCTS

AND SAFE HANDLING AND DISPOSAL INFORMATION PAGE 2 OF 3
DATE : 07/09/89 ZEP HI FOAM DEGREASER
SUPERSEDES: 04/21/89 PRODUCT NUMBER: 0358

SECTION III - HEALTH HAZARD DATA (CONTINUED)

CHRONIC EFFECTS OF OVEREXPOSURE:

REPEATED OR PROLONGED, SKIN CONTACT MAY PRODUCE MILD CENTRAL NERVOUS SYSTEM DEPRESSION, CHARACTERIZED BY HEADACHE, NAUSEA, STUPOR, AND COMA. SKIN WHICH IS DEFATTED BY REPEATED EXPOSURE TO HYDROCARBON SOLVENTS IS MORE SUSCEPTIBLE TO IRRITATION, INFECTION, AND DERMITITIS. ANIMAL STUDIES OF THE EFFECTS OF PROLONGED INHALATION INDICATED A POTENTIAL FOR LUNG DAMAGE AND BLOOD PRODUCTION ABNORMALITIES, SOME OF WHICH WERE FATAL. RELEVANCE OF THESE STUDIES TO HUMAN HEALTH AND THE LEVELS OF EXPOSURE WHICH MIGHT PRODUCE THESE RESULTS, HAS NOT BEEN ESTABLISHED.

NONE OF THE HAZARDOUS INGREDIENTS ARE LISTED AS CARCINOGENS BY IARC, NTP, & OSHA SEE SECTION 9 FOR MORE INFORMATION.

EST'D PEL/TLV: NOT ESTABLISHED PRIMARY ROUTES OF ENTRY: INH, SKIN.

HMIS CODES: HEALTH 2; FLAM. 2; REACT. 0; PERS. PROTECT. X ; CHRONIC HAZ. YES

FIRST AID PROCEDURES:

SKIN : WASH CONTAMINATED SKIN THOROUGHLY WITH SOAP OR A MILD DETERGENT. APPLY A SKIN CREAM WITH LANOLIN. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.
EYES : IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES, OCCASIONALLY LIFTING UPPER AND LOWER LIDS. GET MEDICAL ATTENTION AT ONCE.
INHALE: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. GET MEDICAL ATTENTION IMMEDIATELY.
INGEST: IF SWALLOWED, DO NOT INDUCE VOMITING. IF VOMITING OCCURS, KEEP HEAD BELOW HIP LEVEL. GET EMERGENCY MEDICAL ATTENTION IMMEDIATELY.

SECTION IV - SPECIAL PROTECTION INFORMATION

PROTECTIVE CLOTHING : WEAR NEOPRENE, NITRILE, OR NATURAL RUBBER GLOVES OR GLOVES WITH PROVEN RESISTANCE TO THE INGREDIENTS LISTED.
EYE PROTECTION : WEAR SPLASH-PROOF SAFETY GOGGLES ESPECIALLY IF CONTACT LENSES ARE WORN.
RESPIRATORY PROTECTION: IF VENTILATION IS INADEQUATE, WEAR A PROPERLY FITTING MSA OR OSHA-APPROVED RESPIRATOR.
VENTILATION : VENTILATION SHOULD BE EQUAL TO OUTDOORS. USE EXHAUST FANS AND/OR EXHAUST HOOD IN ENCLOSED SPACES.

SECTION V - PHYSICAL DATA

BOILING POINT (F)	: 202-550F	SPECIFIC GRAVITY	: 0.97
VAPOR PRESSURE(MMHG):	< 1.0	PERCENT VOLATILE BY VOLUME (%)	: 33W/W
VAPOR DENSITY(AIR=1):	> 1	EVAPORATION RATE(BUTYL ACETATE =1):	< 0.1
SOLUBILITY IN WATER	: EMULSIFIES	PH(CONCENTRATE)	: N/A
		PH(USE DILUTION OF	: N/A
APPEARANCE AND ODOR : A CLEAR, RED-ORANGE LIQUID HAVING A STRONG AROMATIC ODOR.			

SECTION VI - FIRE AND EXPLOSION DATA

FLASH POINT(F) (METHOD USED): 145 F (TCC)
FLAMMABLE LIMITS LEL 1.0 UEL 8.0
EXTINGUISHING MEDIA : CO2, DRY CHEMICAL, FOAM
SPECIAL FIRE FIGHTING: FIRE EXPOSED DRUMS SHOULD BE COOLED WITH STREAM OF WATER.
UNUSUAL FIRE HAZARDS : WEAR SELF-CONTAINED POSITIVE PRES. BREATHING APPARATUS.



MATERIAL SAFETY DATA SHEET

ZEP MANUFACTURING COMPANY
FIRST IN MAINTENANCE PRODUCTS

AND SAFE HANDLING AND DISPOSAL INFORMATION PAGE 3 OF 3
DATE : 07/09/89 ZEP HI FOAM DEGREASER
SUPERSEDES: 04/21/89 PRODUCT NUMBER: 0358

SECTION VII - R E A C T I V I T Y D A T A

STABILITY : STABLE
INCOMPATIBILITY(AVOID) : HEAT, OPEN FLAME, SPARK, AND OXIDIZING AGENTS
POLYMERIZATION : WILL NOT OCCUR.
HAZARDOUS DECOMPOSITION: CARBON DIOXIDE, CARBON MONOXIDE, & OXIDES OF NITROGEN

SECTION VIII - S P I L L A N D D I S P O S A L P R O C E D U R E S

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
IMMEDIATELY ELIMINATE ALL FLAME, IGNITION AND HIGH-HEAT SOURCES. ABSORB SPILL ON INERT ABSORBENT MATERIAL (eg ZEP-O-ZORB). PICK UP AND PLACE RESIDUE IN A CLEAN, D.O.T. SPECIFICATION CONTAINER FOR DISPOSAL. WASH AREA THOROUGHLY WITH A DETERGENT SOLUTION AND RINSE WELL WITH WATER.

WASTE DISPOSAL METHOD:

LIQUID WASTES ARE NOT PERMITTED IN LANDFILLS. PRODUCT IS NOT CONSIDERED A HAZARDOUS WASTE UNDER RCRA. UNUSABLE LIQUID MAY BE ABSORBED ON AN INERT ABSORBENT (e.g. ZEP-O-ZORB), DRUMMED AND TAKEN TO A CHEMICAL OR INDUSTRIAL LANDFILL. PRE-TREATMENT MAY BE REQUIRED BEFORE LANDFILLING. CONSULT LOCAL, STATE, OR FEDERAL AGENCIES FOR PROPER DISPOSAL IN YOUR AREA.

RCRA HAZ. WASTE NOS.: N/A

SECTION IX - S P E C I A L P R E C A U T I O N S

PRECAUTIONS TO BE TAKEN WHEN HANDLING AND STORING:
ANIMAL STUDIES INDICATE A POTENTIAL FOR LIVER, KIDNEY, OR RED BLOOD CELL DAMAGE. RELEVANCE OF THESE STUDIES OR EXPOSURE LEVELS WHICH MIGHT PRODUCE THESE EFFECTS IN HUMANS HAS NOT BEEN ESTABLISHED.
COMBUSTIBLE! STORE AND USE AWAY FROM HEAT, SPARKS, OPEN FLAME, OR ANY SOURCE OF IGNITION.
STORE TIGHTLY CLOSED CONTAINER IN A DRY AREA AT TEMPS. BETWEEN 40-120 DEGREES F.
KEEP PRODUCT AWAY FROM SKIN AND EYES.
DO NOT BREATHE SPRAY MISTS OR VAPORS.
KEEP OUT OF THE REACH OF CHILDREN.

SECTION X - T R A N S P O R T A T I O N D A T A

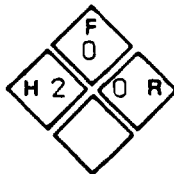
DOT PROPER SHIPPING NAME
NONE

DOT HAZARD CLASS: N/A

DOT I.D. NUMBER : N/A DOT LABEL/PLACARD: NONE

EF TSCA CHEMICAL INVENTORY - ALL INGREDIENTS ARE LISTED

EPA CWA 40CFR PART 117 SUBSTANCE(RQ IN A SINGLE CONTAINER): NONE



MATERIAL SAFETY DATA SHE

CERRO COPPER PRODUCTS CORP.
MSDS NUMBER - CCPC-CC-040
APPROVALS:
ENVIRONMENTAL: _____
SAFETY: _____
9490481981 _____

DATE MAY 15, 1986

SECTION I

MANUFACTURER'S NAME	ZYP COATINGS, INC.	EMERGENCY TELEPHONE NO.	(615) 482-5717
ADDRESS	P.O. BOX 208, OAK RIDGE, TN 37831		
CHEMICAL NAME AND SYNONYMS	BORON NITRIDE	TRADE NAME AND SYNONYMS	BORON NITRIDE LUBRICOAT
CHEMICAL FAMILY	METAL NITRIDE	FORMULA	BN IN PAINT FORM

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (mg/M ³)		%	TLV (mg/M ³)
PIGMENTS BORON NITRIDE	25	5			
VEHICLE WATER*	70	NA			
HYDRATED ALUMINA	5	10			

* WATER IS ACIDIFIED USING NITRIC ACID (HNO₃) AT A 3% CONCENTRATION.

SECTION III - PHYSICAL DATA

BOILING POINT (°F)	NE	SPECIFIC GRAVITY (H ₂ O:1)	1.19
VAPOR PRESSURE (mm Hg.)	NE	PERCENT VOLATILE BY WEIGHT (%)	70
VAPOR DENSITY (AIR=1)	>1	EVAPORATION RATE	LESS THAN WATER
SOLUBILITY IN WATER	DILUTABLE	STATE	LIQUID
APPEARANCE AND ODOR	WHITE/NEARLY ODORLESS		

SECTION IV - FIRE, EXPLOSION & REACTIVITY HAZARD DATA

FLASH POINT (Method used)	NOT FLAMMABLE		
EXTINGUISHING MEDIA	NOT FLAMMABLE		
SPECIAL FIRE FIGHTING PROCEDURES	NONE		
UNUSUAL FIRE AND EXPLOSION HAZARDS	NONE		
STABILITY	UNSTABLE	CONDITIONS TO AVOID	NONE KNOWN
	STABLE	XX	
INCOMPATIBILITY (Materials to avoid)	MATERIALS HIGHLY SENSITIVE TO ACIDIC SOLUTIONS.		
HAZARDOUS DECOMPOSITION PRODUCTS	ON FIRST HEATING TO 600 C, H ₂ O AND NO _x ARE EMITTED IN SMALL		
QUANTITIES.			
HAZARDOUS POLYMERIZATION	MAY OCCUR	CONDITIONS TO AVOID	NONE KNOWN
	WILL NOT OCCUR	XX	

SECTION V - HEALTH HAZARD DATA	
ROUTES OF ENTRY	
INGESTION	INHALATION
CARCINOGENIC.	THRESHOLD LIMIT VALUE
NO	NOT ESTABLISHED
EFFECTS OF OVEREXPOSURE	
MILD SKIN IRRITATION WITH CONTINUED EXPOSURE.	
IRRITATION OR INJURY TO RESPIRATORY TRACT. BURNING IN MOUTH.	
ABDOMINAL PAIN. SEVERE EXPOSURE TO BN DUST MAY PRODUCE	
PNEUMOCONIOSIS. MAY CAUSE EYE DAMAGE. MILDLY ACIDIC, pH=2 to 3.	
EMERGENCY AND FIRST AID PROCEDURES:	
FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES.	
REMOVE CONTAMINATED CLOTHING AND WASH CONTAMINATED AREAS OF THE	
BODY WITH SOAP AND WATER. IF INGESTED, GIVE FLUIDS IN LARGE	
QUANTITIES. IF INHALED, REMOVE TO FRESH AIR AND TREAT SYMPTOMS.	
IF INGESTED OR INHALED, SEEK PROMPT MEDICAL ATTENTION.	

SECTION VI - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
CONTAIN, ABSORB ONTO A NON-FLAMMABLE	
ABSORBANT MATERIAL AND DISPOSE OF AS DIRECTED BELOW.	
WASTE DISPOSAL METHOD	
CONSULT LOCAL, STATE AND FEDERAL REGULATIONS. THIS	
MATERIAL IN LIQUID FORM IS MILDLY ACIDIC, pH=2 to 3.	

SECTION VII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type)		
IF SPRAYED, USE MSHA/NIOSH APPROVED RESPIRATOR.		
VENTILATION	LOCAL EXHAUST	SPECIAL
	NORMAL ROOM VENTILATION	OTHER
MECHANICAL (General)		OTHER
IF SPRAYED USE APPROVED SPRAY BOOTH		OTHER
PROTECTIVE GLOVES	RUBBER	EYE PROTECTION
OTHER PROTECTIVE EQUIPMENT		GOGGLES
PROTECTIVE CLOTHING		

SECTION VIII - SPECIAL PRECAUTIONS FOR SAFE HANDLING	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
STORE IN ORIGINAL CONTAINER. AVOID USE OF	
MATERIALS OR EQUIPMENT SENSITIVE OR REACTIVE WITH ACIDIC SOLUTIONS.	
OTHER PRECAUTIONS	
WHEN DRIED AND UNDER DUSTING CONDITIONS, NOTE EFFECT OF OVER-	
EXPOSURE WITH BORON NITRIDE CONTAINING PRODUCTS CITED ABOVE.	

COMBUSTION ENGINEERING

CERPO COPPER PRODUCTS COMPANY
MSDS NUMBER - CCPC-00-0395
ENVIRONMENTAL: _____
SAFETY: _____
PURCHASING: _____

CER-MAX™ BLU-RAM SHAPES W/SS
FIBERS

0395

COMBUSTION ENGINEERING, INC.
CORPORATE HEALTH & SAFETY
WINDSOR, CT
Phone: (203) 285-9693

MANUFACTURER: C-E Refractories
ADDRESS: P. O. Box 828
Valley Forge, PA 19482
Phone: (215) 337-1100

SECTION I, MATERIAL IDENTIFICATION

Material Name	CER-MAX™ BLU-RAM SHAPES W/SS FIBER
CAS Registry #	Not Applicable
Chemical Composition	Al_2O_3 , SiO_2 , Fe_2O_3 , TiO_2 , P_2O_3 , Na_2O , CaO , MgO , Alkalies

SECTION II, INGREDIENTS AND HAZARDS

CER-MAX™ BLU-RAM SHAPES are manufactured with Blue Ram mix using the SXD process. This product contains less than 5% phosphoric acid, stainless steel needles and in its current state 1% to 2% crystalline silica (free silica).

The current OSHA Permissible Exposure Limit (PEL) for airborne phosphoric acid is 1 mg/m³.

The current OSHA Permissible Exposure Limit (PEL) for respirable crystalline silica dust is 10 mg/m³ divided by percent free silica plus two, averaged over an 8 hours workshift.

When this product is removed after its useful life (tear out) dust generation is likely. The user should be warned of the current PEL and precautions should be taken to avoid inhalation of dust. Refer to Section VI for applicable Health Hazard information and Section IX for Special Precautions and Comments.

This product does not contain any substances listed in the National Toxicology Program "Annual Report on Carcinogens" (1983) nor the International Agency for Research on Cancer Monographs, nor by OSHA.

SECTION III, PHYSICAL DATA

Appearance and odor: Blue block shapes containing stainless steel needles.

SECTION IV, FIRE AND EXPLOSION DATA

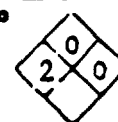
This product is a non-combustible refractory. Use extinguishing media appropriate to the surrounding area.

SECTION V, REACTIVITY DATA

This material is stable.

DEGREE OF HAZARD

4 = EXTREME
3 = HIGH
2 = MODERATE
1 = SLIGHT
0 = INSIGNIFICANT



H.M.I.S.

FLAMMABILITY (RSC)



SPECIAL HAZARD

C-E Refractories
353105M/HLTSF7/5
Combustion Engineering, Inc.

Post Office Box 828
Valley Forge, Pennsylvania 19482

(215) 337-1100
TWX: 510-660-4837

SECTION VI, HEALTH HAZARD DATA

Removal After Service Precautions: Chronic health hazards can occur from long term excessive inhalation of crystalline silica dust. Crystalline silica in the lungs can produce a pneumonconiosis, commonly called silicosis, which is a slowly developing disease. Symptoms are usually delayed (10 years or more). Smoking can increase the risk of injury.

SECTION VII, SPILL, LEAK AND DISPOSAL

DISPOSAL: Non-Biodegradable - Use solid waste disposal common to landfill type operation or similar disposal.

SECTION VIII, SPECIAL PROTECTION INFORMATION

Heavy work gloves are recommended for handling and removal from service.

SECTION IX, SPECIAL PRECAUTIONS AND COMMENTS

REMOVAL PRECAUTIONS:

Because of the possible presence of crystalline silica in used refractory linings, particular care should be exercised during tear-out to minimize the generation of dust. Adherence to proper methods of dust suppression and control is imperative. Following are recommended precautions to be taken during removal:

1. EMPLOYEES SHOULD BE APPRISED OF THE HAZARDS AND PROPER CONDITIONS AND PRECAUTIONS FOR SAFE USE OR EXPOSURE.
2. NIOSH approved respirators should be used for dust levels below 50 mg/cu.m.
3. Dust generation should be minimized by use of dust control equipment or water spray.
4. Wear protective clothing and vacuum clean prior to removing clothing.
5. Where there is a possibility of exposure to dust containing crystalline silica, the following warning should be posted in a readily visible location:

WARNING:

FREE SILICA WORK AREA

AVOID BREATHING DUST

MAY CAUSE DELAYED LUNG INJURY, (SILICOSIS)

Although reasonable care has been taken in the preparation of the information contained herein, Combustion Engineering, Inc. extends no warranties, makes no representation and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

DATE PREPARED: 8/87
REVISED: _____
PRODUCT #: _____

M A T E R I A L S A F E T Y D A T A S H

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 45297

Page: 1

PRODUCT NAME: LIQUIDOW (R) 30-42% CALCIUM CHLORIDE SOLUTION

Effective Date: 02/05/90 Date Printed: 03/09/90

MSDS:001274

1. INGREDIENTS: (% w/w, unless otherwise noted)

Calcium chloride	CAS# 010043-52-4	30-42%
Potassium chloride	CAS# 007447-40-7	1-3%
Sodium chloride	CAS# 007647-14-5	1-2%
Water	CAS# 007732-18-5	BAL.

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 230-251F, 110-122C
VAP PRESS: 7-15 mmHg @ 25C, 77F
VAP DENSITY: Same as water.
SOL. IN WATER: Completely miscible
SP. GRAVITY: 1.297-1.437 @ 25C, 77F
APPEARANCE: Clear to straw liquid solution.
ODOR: None.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: Not applicable
METHOD USED: Not applicable

FLAMMABLE LIMITS
LFL: Not applicable
UFL: Not applicable

EXTINGUISHING MEDIA: Non-combustible.

FIRE & EXPLOSION HAZARDS: None.

(Continued on Page 2)

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M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

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PRODUCT NAME: LIQUIDOW (R) 30-42% CALCIUM CHLORIDE SOLUTION

Effective Date: 02/05/90 Date Printed: 03/09/90

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3. FIRE AND EXPLOSION HAZARD DATA: (CONTINUED)

FIRE-FIGHTING EQUIPMENT: Wear positive pressure self-contained breathing apparatus.

4. REACTIVITY DATA:

STABILITY: (CONDITIONS TO AVOID)

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Calcium chloride will: corrode most metals exposed to air; attack aluminum (and its alloys) and yellow brass; react with sulfuric acid to form hydrogen chloride which is corrosive, irritating, and reactive; give an exothermic reaction with water-reactive materials such as sodium; result in a runaway polymerization reaction with methyl vinyl ether (Bretherick, 1979); and, in solution form react with zinc (galvanizing) to yield hydrogen gas which is explosive (Ibid). (Bretherick, L., 1979, Handbook of Reactive Chemical Hazards, 2nd Ed.).

HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Losses incidental to correct applications of this product in its intended uses are not expected to be harmful to the environment. Wear appropriate safety apparel during cleanup -- see Section 8. Contain by diking, etc. Avoid entry of large amount of product into sewers, natural waters, and drinking water sources. Due to possible harmful effects, avoid contact with vegetation, animals, and fish life. Recover quickly into suitable containers if reusing; or collect using absorbent material or sand. Small quantities may be flushed away with plenty of water. Walking surfaces may remain wet longer due to moisture

(Continued on Page 3)

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M A T E R I A L S A F E T Y D A T A S H E E T

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

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PRODUCT NAME: LIQUIDOW (R) 30-42% CALCIUM CHLORIDE SOLUTION

Effective Date: 02/05/90 Date Printed: 03/09/90

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5. ENVIRONMENTAL AND DISPOSAL INFORMATION: (CONTINUED)

being held by spilled product -- avoid by thoroughly water washing surfaces.

DISPOSAL METHOD: Comply with federal state, and local laws; regulations, and procedures. Contact manufacturer and authorities for detailed information. Product as sold is not a RCRA listed or characteristic hazardous waste.

6. HEALTH HAZARD DATA:

EYE: May cause moderate to severe eye irritation with corneal injury, which may be slow to heal. Material is sometimes encountered at elevated temperatures; more intense effects as well as thermal burns are possible.

SKIN CONTACT: Short single exposure not likely to cause significant skin irritation. Prolonged or repeated exposure may cause skin irritation, even a burn. May cause more severe response if confined to skin or skin is abraded (scratched or cut). Material is sometimes encountered at elevated temperatures; more intense effects as well as thermal burns are possible. DOT Classification: Non-corrosive.

SKIN ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The LD50 for skin absorption in rabbits is >5000 mg/kg for CaCl₂.

INGESTION: Single dose oral toxicity is believed to be low. The oral LD50 for rats is in the range of 900-2100 mg/kg for calcium chloride on a 100% basis. Ingestion may cause gastrointestinal irritation or ulceration.

INHALATION: Vapors are unlikely due to physical properties. Mists may cause irritation to upper respiratory tract.

SYSTEMIC & OTHER EFFECTS: The components of this product are not

(Continued on Page 4)

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MATERIAL SAFETY DATA SHEET

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

Product Code: 45297

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PRODUCT NAME: LIQUIDOW (R) 30-42% CALCIUM CHLORIDE SOLUTION

Effective Date: 02/05/90 Date Printed: 03/09/90

MSDS:001274

6. HEALTH HAZARD DATA: (CONTINUED)

listed by IARC, NTP, or OSHA as a carcinogen for hazard communication purposes. Results of in vitro mutagenicity tests have been negative for CaCl_2 .

7. FIRST AID:

EYES: Irrigate with flowing water immediately and continuously for 15 minutes. Consult medical personnel.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Call a physician. (Never give anything by mouth or attempt to induce vomiting in an unconscious person.)

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: If burn is present, treat as any thermal burn, after decontamination. No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

8. HANDLING PRECAUTIONS:

EXPOSURE GUIDELINE(S): Dow IHG is 10 mg/m³ for calcium chloride, sodium chloride, and potassium chloride. There is no OSHA PEL or ACGIH TLV for calcium chloride.

VENTILATION: Provide general and/or local exhaust ventilation to control airborne levels below the exposure guidelines.

RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying

(Continued on Page 5)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

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PRODUCT NAME: LIQUIDOW (R) 30-42% CALCIUM CHLORIDE SOLUTION

Effective Date: 02/05/90 Date Printed: 03/09/90

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8. HANDLING PRECAUTIONS: (CONTINUED)

respirator.

SKIN PROTECTION: For brief contact, no precautions other than clean body-covering clothing should be needed. Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, or full-body suit will depend on operation. If skin comes in contact with contaminated clothing, remove the clothing immediately, wash skin area with soap and water, and launder clothing before reuse.

EYE PROTECTION: Use chemical goggles. Eye wash fountain should be located in immediate work area.

9. ADDITIONAL INFORMATION:

REGULATORY REQUIREMENTS:

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA 'Hazard Categories' promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard (due to skin and eye effects).

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Product may sometimes be shipped hot, which may cause thermal burns and probable more intense chemical irritation or burn than at ambient temperatures. Avoid eye and prolonged skin contact. ALWAYS USE COOL WATER (TEMPERATURE LESS THAN 80F, 27C) WHEN DILUTING CALCIUM CHLORIDE SOLUTION. HEAT DEVELOPED BY SOLUTIONS IS VERY HIGH DURING MIXING. Leather clothing and shoes will be damaged by calcium chloride.

MSDS STATUS: Revised Section 4.

(Continued on Page 6)

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

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PRODUCT NAME: LIQUIDOW (R) 30-42% CALCIUM CHLORIDE SOLUTION

Effective Date: 02/05/90 Date Printed: 03/09/90

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